Fourth Quarterly Roundup:
Construction Cost and Estimating Guide

Dec. 25, 1958

ENGINEERING NEWS-RECORD

PRICE 50 CENTS

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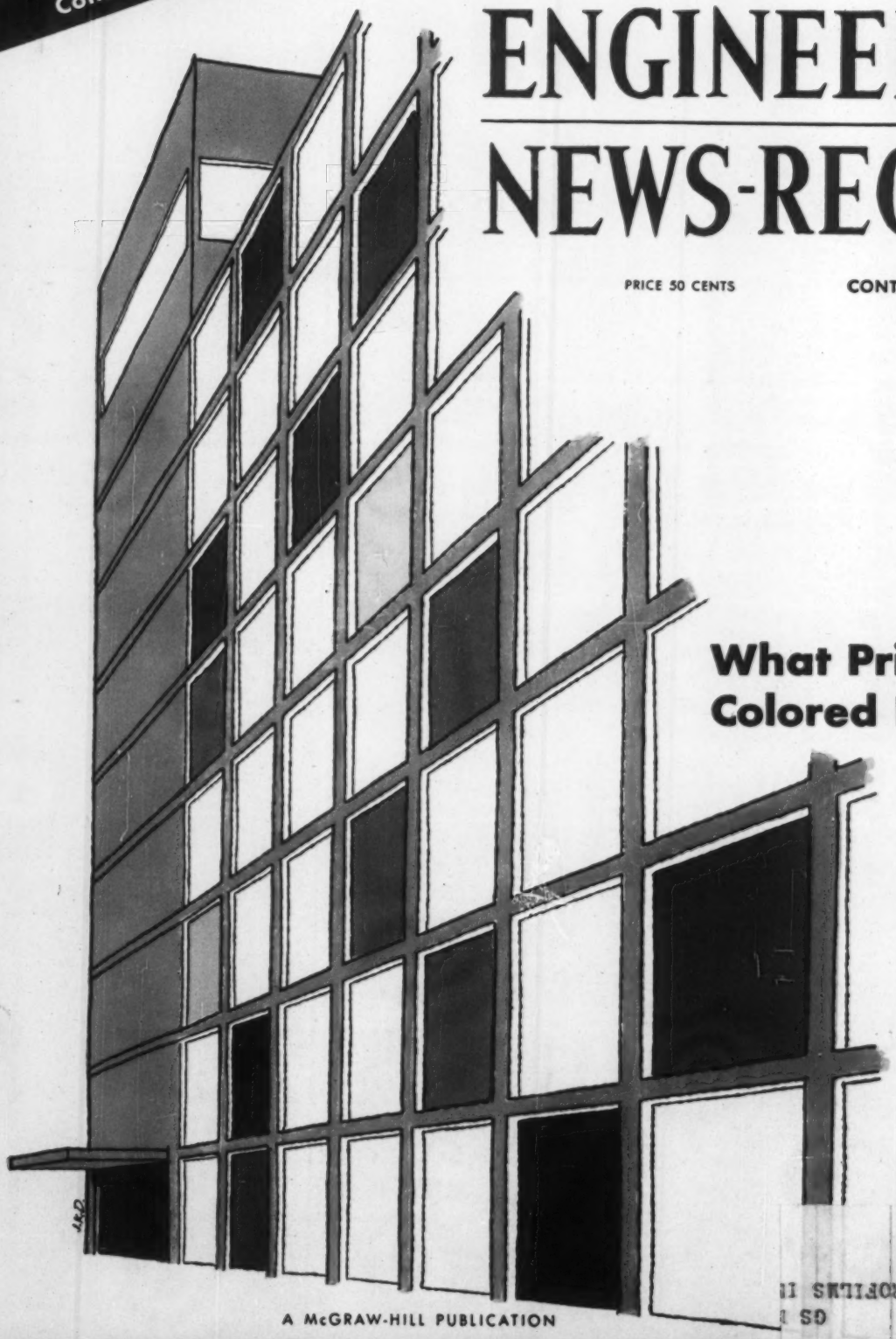

What Price Colored Buildings?

p. 29

A McGRAW-HILL PUBLICATION

STEVENS RICE GS
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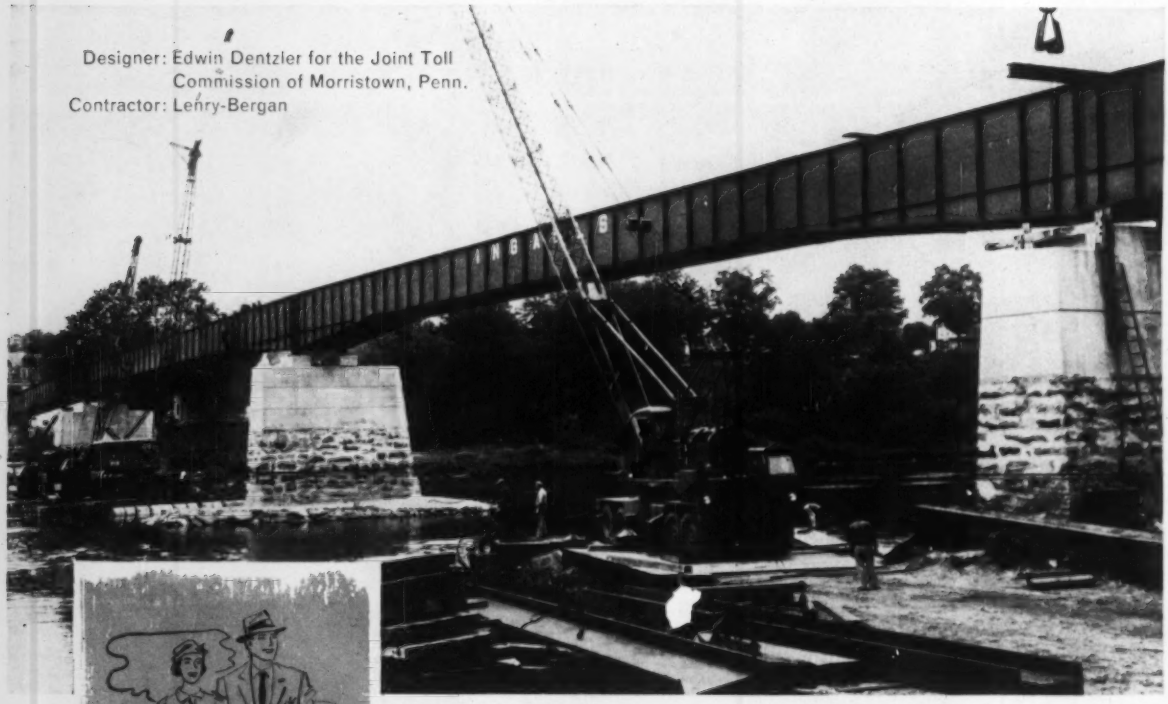
Designer: Edwin Dentzler for the Joint Toll Commission of Morristown, Penn.
Contractor: Lenry-Bergan



Safety First... With INGALLS STEEL

Safe pedestrian travel was the basic reason for building this unusual footbridge over the Delaware River, between Portland, Pennsylvania and Columbia, New Jersey. Over 300 tons of steel went into the structure of the 768-foot bridge.

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The simple profitable way to give your plant TWO kinds of power from ONE dependable power source

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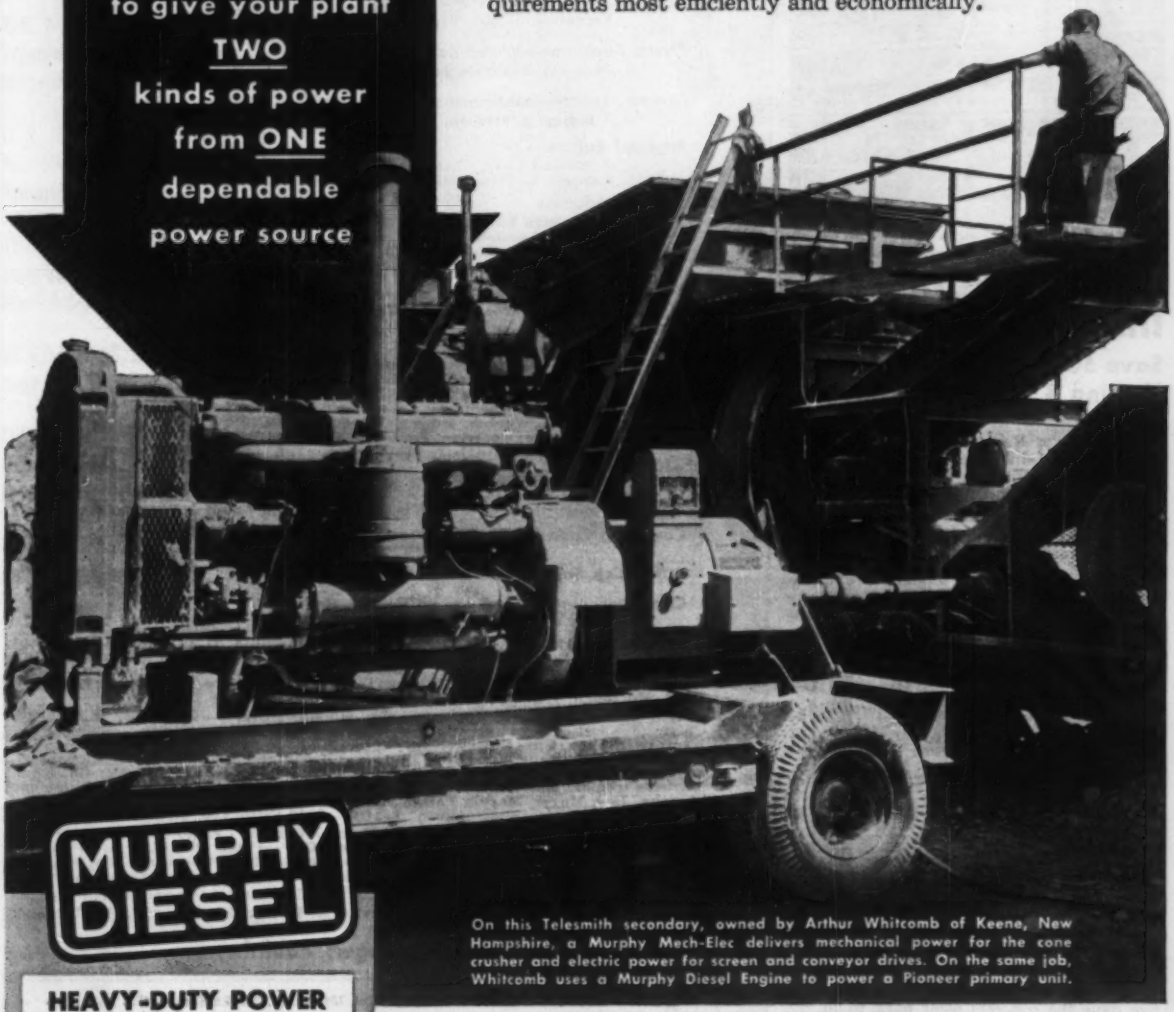

On this Telesmith secondary, owned by Arthur Whitcomb of Keene, New Hampshire, a Murphy Mech-Elec delivers mechanical power for the cone crusher and electric power for screen and conveyor drives. On the same job, Whitcomb uses a Murphy Diesel Engine to power a Pioneer primary unit.

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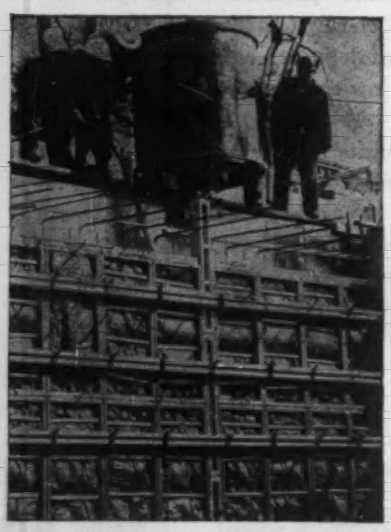
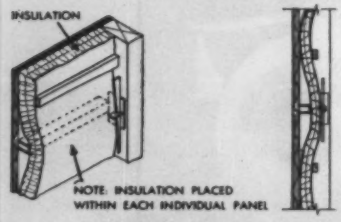


Symons Forms and Balsam Wool Insulation

Save 50% on Cost of Heating & Curing Concrete

C. R. Meyer & Sons Company, Oshkosh, Wisconsin posted this record 50% savings on the new $1,000,000 central office building of the Wisconsin Telephone Company at Oshkosh. Two-inch insulation in 24-inch widths was tacked to the forms. Walls were 12 inches thick and varied in height from 12 to 16 feet.

Pouring was started in January. Temperatures ranged from five to 25 degrees above zero. Concrete at time of pour was held in the 70 to 80-degree range. During one pour a



Cutaway section of form with insulation

tube was cast in the wall four feet from the top with a thermometer suspended in the bottom. After 24 hours, temperature at center of concrete rose to 105 degrees and after five days the concrete went back to 70.

Symons forms, shores and column clamps may be rented with purchase option. FREE literature on Symons' products is available upon request.

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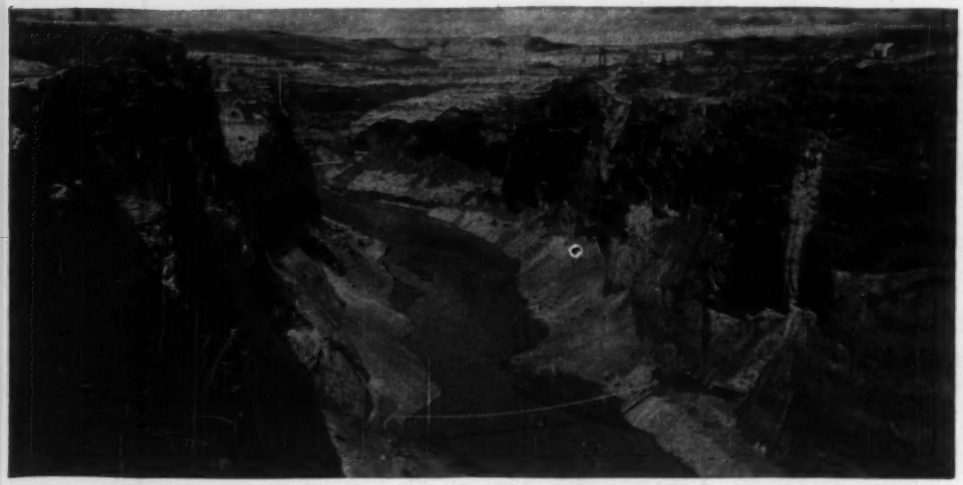
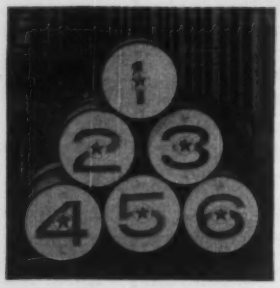
SECOND LARGEST DAM IN THE U. S., at Glen Canyon, Ariz., will incorporate two of these 2,800 ft. diversion tunnels. Frazier-Davis equipment runs dependably, stays on the job, thanks to the Texaco Simplified Lubrication Plan.



Glen Canyon tunnel borings nearing completion with Texaco Plan



Only 6 lubes needed to keep Frazier-Davis equipment working dependably

This is Frazier-Davis Construction Company's job: to bore the east side diversion and service tunnels, with a combined length of 2½ miles, through the walls of Arizona's Glen Canyon. It's a vital project, part of the Bureau of Reclamation's $760 million development of 10,000 square miles of arid land. On a job as big as the Glen Canyon Dam, on-time completion of every phase is absolutely essential. And that puts a priority on dependable equipment performance.

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Texaco Regal Oil R&O—prevents formation of rust and harmful deposits in compressor systems.

Texaco Universal Gear Lubricant EP—keeps differentials and transmissions running smoothly at low cost.

Bureau of Reclamation photos

Texaco Marfak Multi-Purpose 2—protects wheel bearings, chassis, water pumps against dust, moisture and wear.

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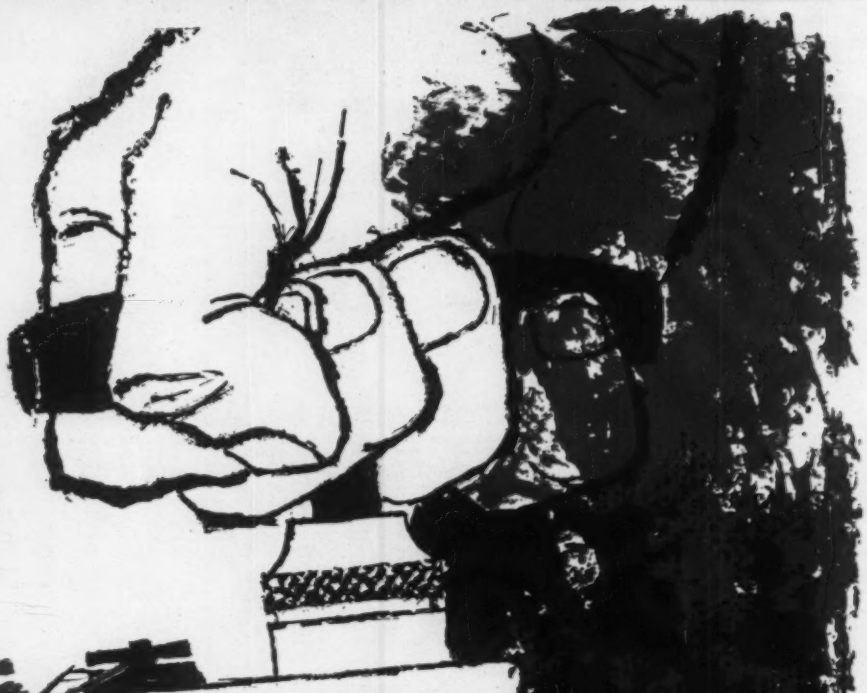

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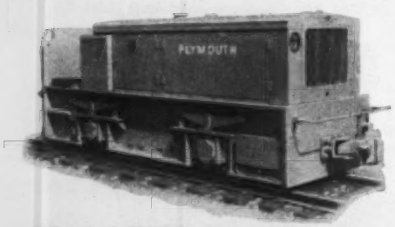

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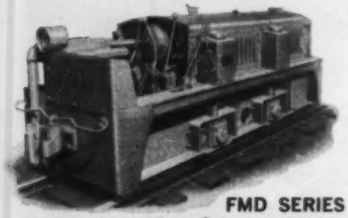
Do you have a tough construction, tunneling, or mining job? Plymouth Mine-O-Motives with Diesel-hydraulic power and exhaust conditioners take them all in stride, are presently working on some of the toughest jobs in the U.S.A. Available with chain or shaft drive, the extra-rugged construction of Plymouth Mine-O-Motives will save you money and help you beat deadlines. Send a brief outline of *your* hauling problem to Dept. A-4 today!



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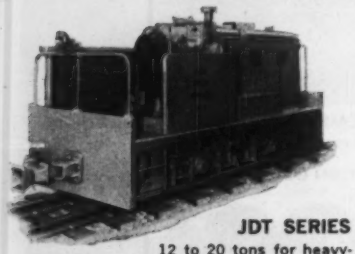

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Reader Comment

What Length Columns?

SIR—Mr. John A. Sbarounis' letter (ENR Oct. 30, p. 8) called attention to a most interesting and important problem of building frame analysis. His discussion of the Inland Steel Building dramatically demonstrated the grave errors which can be caused by assuming that the effective unsupported length of columns equals the story height.

For structures where side sway is not prevented by shear walls or other means, this assumption is the lower limit for effective column length. It can be realized only when the relative stiffness of girders becomes infinite in relation to column stiffness.

In preparing recommended revisions to the Building Code of the City of Boston, the Structural Steel Committee, of which I am a member, has carefully considered this problem. The new code will provide a simple method for obtaining the effective unsupported column length based on relative girder to column stiffnesses at each end of a column.

In order to avoid awkward formulas, the code will use nomographic charts for determining effective length factors.

Using our proposed code, I computed the equivalent unsupported length for the columns in a building frame which approximates the Inland Steel Building. The result was a length equal to three times the story height which agrees very closely with the results of Mr. Sbarounis.

The code committee believes that the modern tier building built with thin curtain walls and no other shear walls is particularly sensitive to the instability of columns where they are supported laterally only through frame action. I am happy to see that this problem is being considered by other engineers.

The problem of column design has long been oversimplified both in practice and in the classroom. Perhaps a revision of nationally recognized design specifications is in order.

WILLIAM J. LEMESSURIER
Goldberg, LeMessurier & Associates
Boston, Mass.

SIR—I was most interested to read the letter from Mr. John A. Sbarounis entitled, "Why Frames Are Unstable."

I must confess that I found it strange upon my arrival from Britain to find that columns here were designed without the degree of fixity afforded by the floor or spandrel being taken into account.

It may be of interest to note that in Britain the column length for design purposes varies from 0.7 to 1.5 times the distance between floors, and the coefficient used is dependent upon the degree of support afforded the column by the beams framing into it.

That this is considered important in Britain may be deduced from the fact that the British Standard 449:1958, The Use of Structural Steel in Buildings, devotes 15 pages to this.

G. T. TROTTER
Manitoba, Canada

School Dispute

SIR—Your editorial, "What Kind of Schools?" (ENR Nov. 27, p. 96) certainly capitalizes upon public opinion concerning school cost and extravagance. Both sides of the arguments are being considered nationwide.

I believe that each town or community has to vary its school expenses because of impending tax hikes, some towns being able to spend more than others for the same educational standards. Therefore, the responsibility lies with the architect himself to use sound reasoning on each community's economic standards before proceeding with his design.

LESLIE M. BUCKINGHAM, JR.
Boston 16, Mass.

Local Group Pays

Sir—We wish to point out one misstatement of fact in the item "Concrete vs Steel" (ENR Nov. 20, p. 17).

The item refers to the alternate bids that will be taken by the New York City Housing Authority on the Woodrow Wilson Houses. In it this statement is made: "The odds now favor

(*Continued on page 12*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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ADDS UP TO

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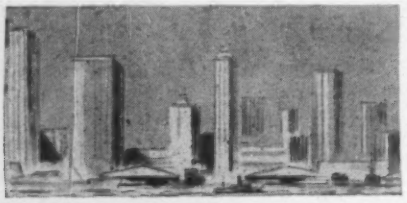
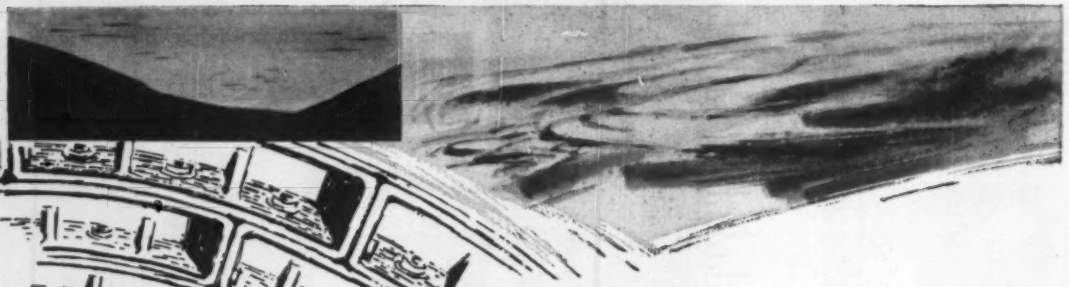
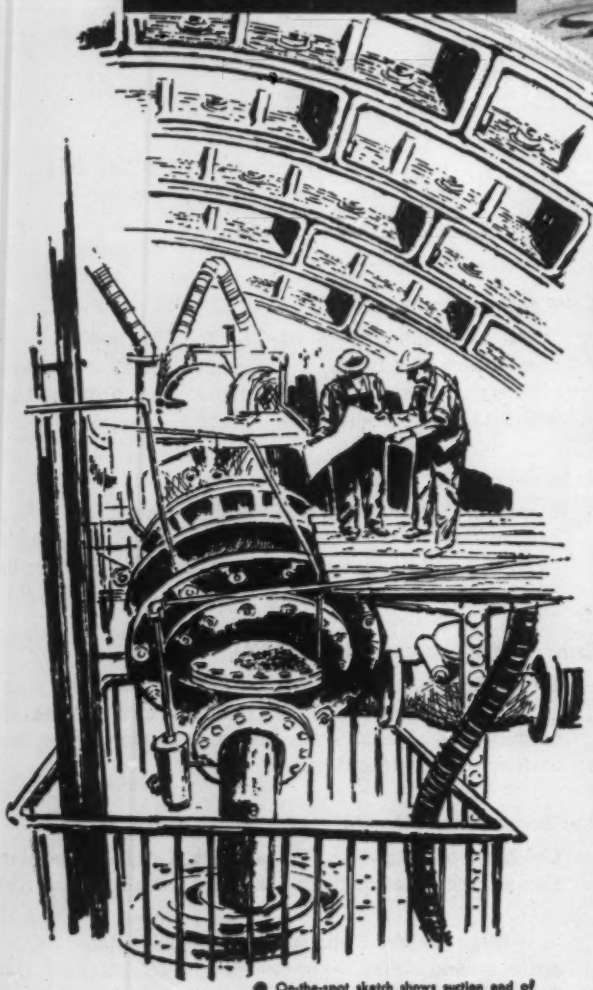


For experience in centrifugal pump applications:





● On-the-spot sketch shows suction end of dredge pump, protected by grizzly (debris rack), removing silt from third tube of Lincoln Tunnel. Illustrated reprints of article covering this operation are available on request.

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Field Engineering

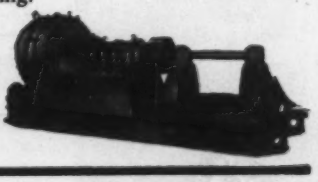
You use all possible precision in determining your pumping needs. Having done so, you expect an expert, candid appraisal of those needs — and the means of fulfilling them — from a pump manufacturer. Morris provides this . . . and more.

CASE HISTORY: Removal of 8 to 14 feet of silt from the bottom of mile-long Hudson River tunnels has traditionally been done by laborious hand-loading of trucks on temporary rails. A Morris engineer, together with the contractor for the third Lincoln Tunnel, worked out a method of converting silt to slurry with high-pressure fire hoses, and removing with two Morris Dredge Pumps.* Removal time was cut from *20 weeks to 20 days!*

This is only one instance where Morris application know-how has saved customers many thousands of dollars.

In back of that know-how is the Morris know-*why* of modern hydraulic design . . . and nearly a century-long practice of building superb performance and durability into each and every Morris Pump.

Add to this the most complete slurry laboratory maintained by a pump manufacturer for the *anticipation* of critical velocities, pressures, etc., involved in your pumping problem . . . and you may wish to join the pump users all over the continent who come to Morris for help in pump applications engineering.



*Two Morris 10 GA 28½" Pumps (right) were used . . . one as a dredge . . . the other as a booster.

MORRIS
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PUMPS

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Factory-assembled panels for low-voltage switchboards

Designed to save space with a clear layout.
Metal clad for accident prevention.
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Truck-mounted breakers for safe and easy maintenance.

Quantity production of standard components leaves little installation work on site and facilitates subsequent extension.

The wealth of AEG's experience in building up low-voltage switchboards from factory-assembled panels is at your service.
Consult AEG when planning your switch plant, and you will have control gear tailored to suit your own needs.

Switchboards
made up of factory-assembled panels
can be easily arranged to fit the available space

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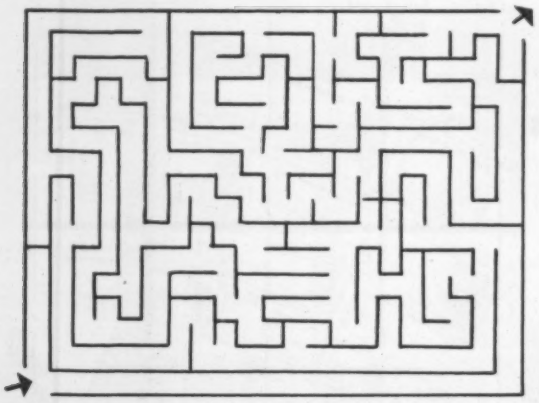
Berlin (West) EXPORT DEPARTMENT Frankfurt (Main)

TRICKY TRACINGS

TRY IT! Without crossing lines or retracing, how quickly can you go from one arrow to the other? See average time below.



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. . . Reader Comment

steel, because the American Institute of Steel Construction is paying for the alternate design."

We wish to call to your attention that the money for the alternate design was contributed by a group of local fabricators who operate in the New York City area. This group includes both members and non-members of AISC. No money was actually contributed by the AISC, but we did transmit the funds to the Housing Authority.

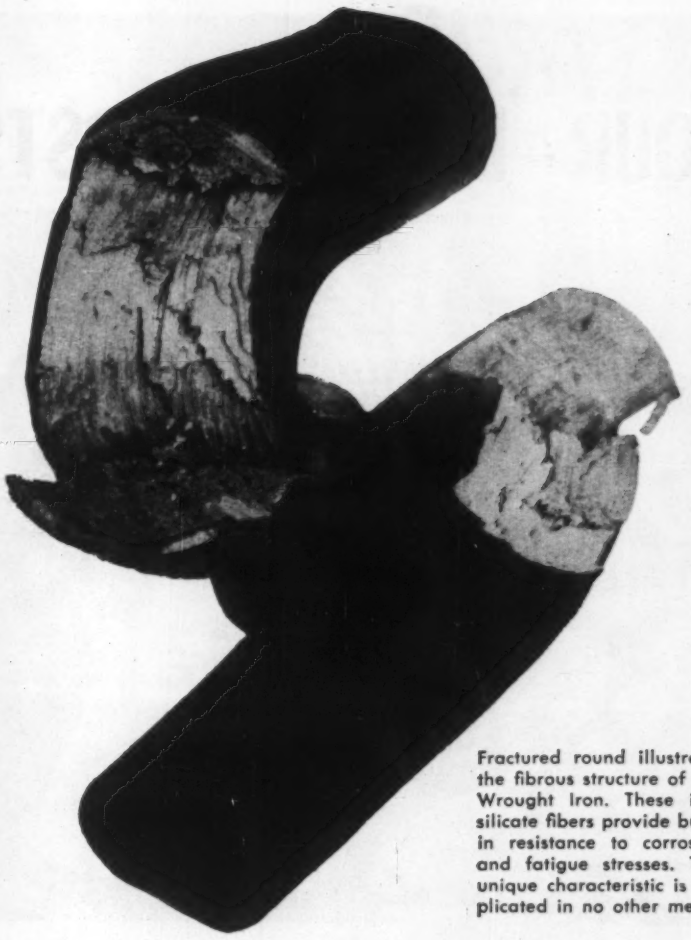
L. Abbett Post
Executive Vice President
American Institute of Steel Construction, Inc.
New York, N. Y.

Dropped a Cipher

Spillway discharge capacity of Pakistan's Mangla Dam will be 1,000,000 cu ft per sec—not 100,000 cfs as reported in ENR July 24, p. 55.

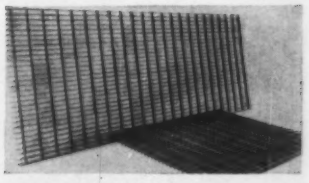
For Your Calendar . . .

Highway Research Board, Sheraton-Park, Washington, D. C., Jan. 5-9.
National Concrete Masonry Association, 1959 convention and biennial Concrete Industries, Exposition, Public Auditorium, Cleveland, Ohio, Jan. 12-15.
Building Research Institute, "Noise Control in Buildings," New Yorker Hotel, New York City, Jan. 14-15.
Canadian Construction Association, Queen Elizabeth, Montreal, Canada, Jan. 18-22.
National Association of Home Builders, Hotel Conrad Hilton, Sherman Hotel, and Chicago Coliseum, Chicago, Ill., Jan. 18-22.
American Road Builders Association, Materials and Services Division, Dallas Memorial Auditorium, Dallas, Texas, Jan. 19-22.
Associated General Contractors of America, Inc., Hotel Americana, Miami Beach, Fla., Jan. 19-23.
Associated Equipment Distributors, Hotel Conrad Hilton, Chicago, Ill., Jan. 25-29.
Association of Asphalt Paving Technologists, Brown Palace, Denver, Colo., Jan. 26-28.
American Society of Heating and Air Conditioning Engineers, Convention Hall, Philadelphia, Pa. Jan. 26-29.
National Crushed Stone Association, Americana Hotel, Miami Beach, Fla., Jan. 26-30.
Society of Plastics Engineers, 15th annual technical conference, Hotel Commodore, New York City, Jan. 27-29.
National Bituminous Concrete Association, 4th annual meeting, Americana Hotel, Miami Beach, Fla., Feb. 2-6.
Mason Contractors Association of America, ninth annual convention and 1959 show, Chase-Park Plaza Hotels, St. Louis, Mo., Feb. 15-18.
National Ready Mixed Concrete Association, Roosevelt Hotel, New Orleans, La., Feb. 15-19.
American Concrete Institute, Statler Hilton Hotel, Los Angeles, Calif., Feb. 23-26.
National Council for Stream Improvement, Waldorf-Astoria, Astor Gallery, New York City, Feb. 23-25.
32nd Highway Engineering Conference, University of Colorado, Boulder, Colo., Mar. 5-6.
American Society for Public Administration, Statler-Hilton, Washington, D. C., Mar. 16-18.
National Association of Corrosion Engineering, Hotel Sherman, Chicago, Ill., Mar. 16-20.

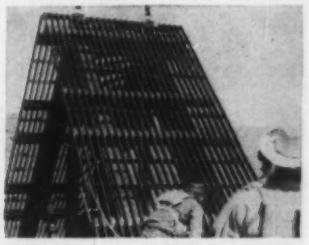


Fractured round illustrates the fibrous structure of 4-D Wrought Iron. These iron silicate fibers provide built-in resistance to corrosion and fatigue stresses. This unique characteristic is duplicated in no other metal.

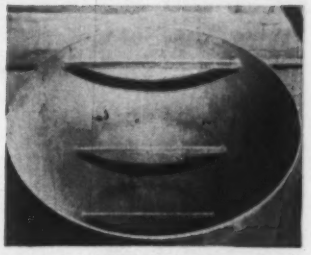
RAILINGS



GRATINGS



TRASH RACKS



LADDER STEPS

PITTSBURGH—"A full line of 4-D Wrought Iron bars, rounds and angles is now available from A. M. Byers Company. Bars are available in lengths up to 30 feet. Orders will be shipped within 2 to 7 days after receipt in Pittsburgh."—*A. S. Chalfant, Vice President.*

To meet the expanding market applications of our specifiers, Byers is now geared for quick service on 4-D Wrought Iron bars and shapes.

Our company has *always* manufactured Wrought Iron bars and shapes in limited sizes. But increased demand for 4-D Wrought Iron in commercial, industrial, and residential specifications has prompted us to supplement our line even more fully.

4-D Wrought Iron's resistance to corrosion and fatigue stresses keeps maintenance at rock bottom. No costly repairs. No premature failures. Thus, users of this versatile material can look forward to long life installations at the lowest cost per year of service.

Availability of a full line of 4-D Wrought Iron bars, rounds and angles—with dependable, rapid-fire delivery—now enables specifiers to install complete jobs with this durable metal. Now, you need no longer use ferrous substitutes in such applications as: scuppers, gratings, dowel rods, fasteners, trash racks, railings, manhole ladder steps. We'd be glad to relate 4-D Wrought Iron's advantages to *your* tough jobs.

Ask the Byers representative for specific information. Or, write us for a prompt reply. A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

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Corrosion costs you more than Wrought Iron

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WHAT ARE YOUR ^ BLASTING COSTS?

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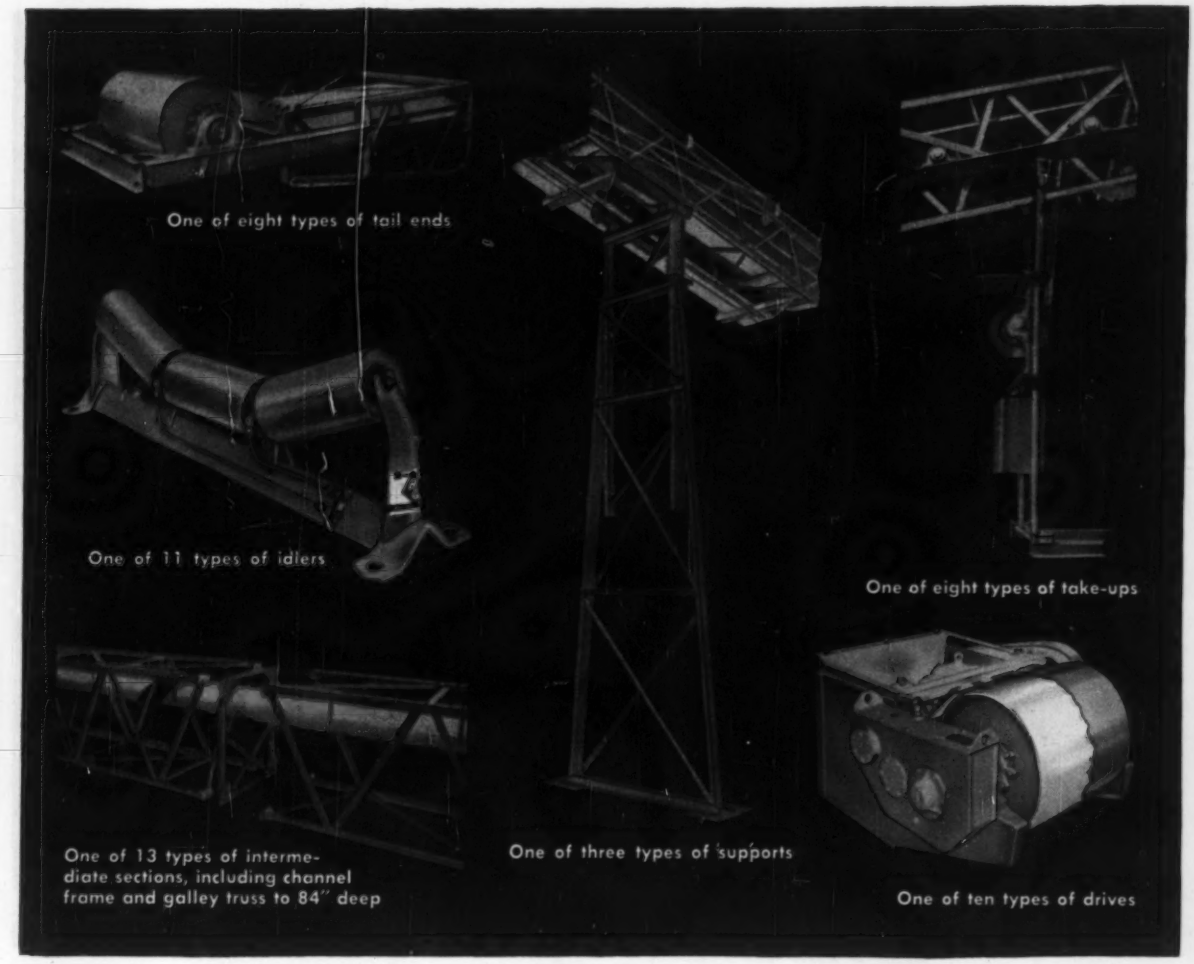
One of eight types of tail ends
One of 11 types of idlers
One of 13 types of intermediate sections, including channel frame and galley truss to 84" deep
One of three types of supports
One of eight types of take-ups
One of ten types of drives

Pictured here are just a few of the many Barber-Greene standardized conveyor components. Each is available in a wide variety of types and sizes, with unmatched flexibility for countless ways of assembly. Write for new bulletin.

Boost conveyor efficiency and cut costs with Barber-Greene standardized components

Every year, more and more belt conveyor installations — long and short, simple and complex — are made up of Barber-Greene standardized, "packaged" components. This standardization means fast, off-the-shelf delivery . . . almost limitless combinations of assembly that cut time and costs on any bulk material handling job . . . components completely interchangeable . . . spare parts readily available . . . simple selection and pricing right from the catalog. Light or heavy, Barber-Greene has the complete conveyor installation you need.

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- **You save erection time and expense.**
- **You save on alignment.**
- **You save on replacement costs.**
- **You save down time.**

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ENGINEERING NEWS-RECORD

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Number of copies printed this issue 83,800

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

CONTRACTS: STRONG FINISH—Heavy construction will finish the year on two high notes: December contract awards are running at the best monthly rate since last August; and that's pushing total 1958 volume over $19 billion (second only to 1956's record $21.7 billion). What's more, many large jobs still have not yet been awarded. They will give 1959 a good start when they go to contractors early next year.

FABRICATORS SEE GOOD YEAR—Structural steel fabricators will do a bigger business in 1959 than 1958. That's the word from the American Institute of Steel Construction, which says fabricators' bookings next year will top 3 million tons. This year, bookings are at 2.8 million. All-time high was scored in 1956 when 4.7 million tons were ordered. No supply problem is anticipated in 1959.

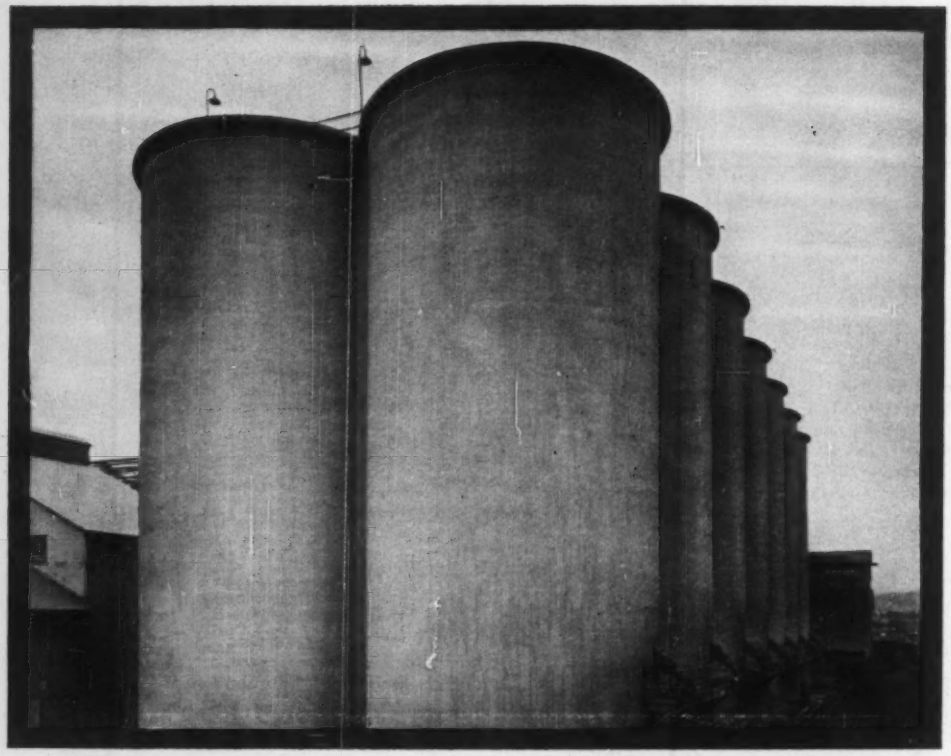
BIG JOB COMING—You can expect bid calls on the $200 million Wanapum Dam in Washington State between January 15 and February 1. The sponsor, Grant County Public Utility District, ordered the financial managers to postpone formation of an underwriting group. But that was basically a technical move; it's not expected to delay progress. Construction contract may be awarded about 60 days after the bid call.

IRAQ STIRS—In a state of unanimated suspension since its revolution, Iraq has lately made a few cautious moves to resume its vital economic development. A U. S. consulting engineer, with a large continuing contract, last week received the first payment for his services since the revolution.

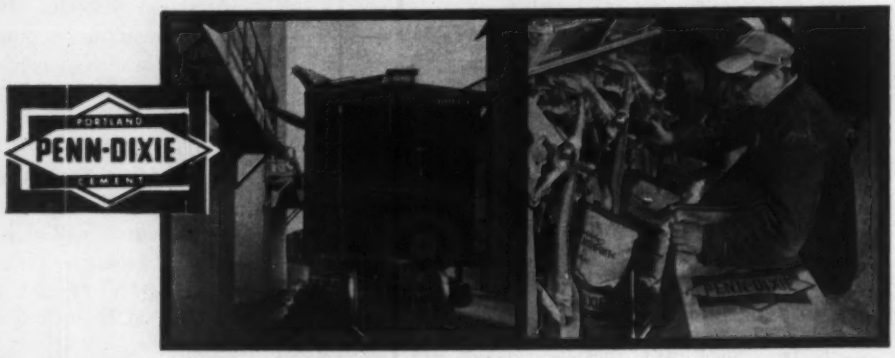
CONSULTANTS' FEES—Consulting engineers will get new guidance for setting their fees early in 1959. Those who do highway work will get special help. New fee curves will be issued by the American Society of Civil Engineers. And the curves for highway work will have had special attention of highway groups outside ASCE—including the Federal Highway Administrator.

COMING: AIR COOLING—Shrinking water resources may make industrial cooling with water too costly. As a result factories will have to resort to air cooling. That's the veiw of Ralph T. Mathews, senior power consultant for the design division of E. I. du Pont de Nemours & Co., who reported at the annual meeting of the American Institute of Chemical Engineers.

NEW YORK-MONTREAL CANAL—Canadian engineers can't see any technical obstacles to a 37-ft-deep inland ship channel between New York and Montreal. A study just completed by Quebec engineers agrees substantially with an earlier American report.



Huge Silos Store "Harvest" of Penn-Dixie Cement—For Package or Bulk Shipment



Penn-Dixie cement is stored in huge silos until the time comes for shipment. It is then either shipped in bulk or in paper bags. Silos like those shown above each contain 15,000 barrels . . . this entire battery of 14 silos holds over 200,000 barrels of Penn-Dixie cement!

The packaging operation is largely automatic. An ingenious self-closing valve in the paper bag is placed over the nozzle or loading tube of the packing machine. The flow of cement is automatically shut off when 94 pounds have entered, and the bag seals itself from the inside by the pressure of the cement. When shipped in bulk, the cement is pumped into covered hopper cars which were originally devised for the cement industry.

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WASHINGTON OBSERVER

- **Will President stand firm on public works?**
- **Federal airport aid gets a supporter**
- **Commerce plans new surveys of business**

● **As of this week, the Administration drive to cut federal spending hasn't hit any of the new starts ordered for this fiscal year.** Washington has been buzzing with rumors that this year's public works programs might be cut back. Before the election, the Budget Bureau said specifically that the program of starts would go through as planned. After the election, President Eisenhower took up the economy drive again and caused worries about a switch.

Despite the campaign to cut spending, the Army Engineers and the Bureau of Reclamation are going ahead with the starts as Congress voted money over the President's objections.

The Administration's stand on new starts for the year beginning next June 30 is another matter.

Officials expect the President to take the same stand in his January State of the Union and budget messages as he did a year ago. He then recommended no new starts at all. The new, heavily Democratic Congress will be sure to oppose him on this. But with the recession pressure off the White House, President Eisenhower may be inclined to be tougher in using his veto powers to cut spending.

The unanswered question: How steadfast will the President stand at a time when the liberals in his own party are organizing to combat what they consider his swing to the right?

—

● **Federal aid to airports will get a firm supporter January 1 when Gen. Elwood Quesada takes over the new federal aviation agency.** Actually, General Quesada has been on the job for some time, but the take-over isn't official until the first of the year.

General Quesada is strongly in favor of federal aid to finance runways—although he would exclude terminal buildings. He's likely to go along with some modification of the $100-million-a-year program that the President vetoed earlier this year.

—

● **Commerce Department next year plans to launch quarterly surveys that will give building materials producers and contractors a better line on the outlook for industry sales and inventories.**

The department will survey producers' intentions concerning inventories and sales. The idea is comparable to the successful surveys now made of consumers' intentions to buy, manufacturers' capital spending plans and employers' hiring plans.

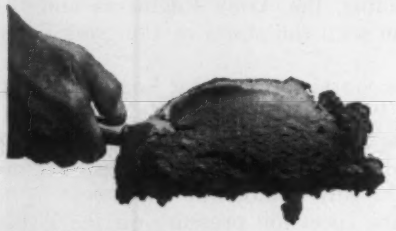
The new surveys will encompass all areas of manufacturing, with 1,500 manufacturers praticipating. Breakdowns will be available for major manufacturing industries.

The department already has made two dry runs and reports notable success with the inventory outlook. Not so successful are the sales anticipations; apparently more development is needed here.

The new survey will offer a much-needed tool for better short-term forecasting of economic trends.

Good to the Core

From Pilings to Frame to Masonry, a 100% LONE STAR Job



● The trend today is to space-saving center core design with lightweight reinforced-concrete frame —as shown in the new $3,500,000 Saratoga Building in New Orleans. From piling on up, from core on out, it is a 100% Lone Star job—and the ultimate in sound, fire-safe construction.

Fifteen stories tall, the 140-ft. by 94-ft. office building contains 160,000 sq. ft. of floor area, including a branch bank and commercial stores on the ground floor. The center core frame of reinforced concrete—housing elevators, stairs and utilities—provides great stability with fewer columns, allowing greater floor utilization. The electrical duct distribution system was cast into the floor rib joists, and air conditioning ducts are located between exterior walls and columns. 21 day strength of 3,750 psi was specified for the concrete floors, and 5,000 psi for the columns.

Lone Star Masonry Cement, used in laying up brick, block and stone, both *simplified* the job and assured *uniformly* high quality mortar:

- One ready-to-use material instead of two means time saved, uniform results, a mortar you can be sure of.
- High water retention means extra plasticity and workability . . . longer mortar beds, working header high before striking.
- High water repellency means durable, weather-resistant performance, making unnecessary the addition of any waterproofing material.

Standardize on Lone Star products for *all* your construction — then you can be *sure* the results will be good to the core!

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HERBERT A. BENSON & GEORGE J. RIEHL

Engineers:
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Struggle Ahead on U.S. Spending

- **Federal construction outlays next year hinge on the outcome of a battle between a more liberal Congress and a more conservative President**
- **The Democrats in Congress will be pushing for larger outlays in most fields**
- **The President wants to keep spending at $80 billion. Many of his holddown orders will strike directly at construction plans**
- **Here's what you can expect to see in coming months . . .**

Washington is bracing for a political struggle of classic dimensions.

The outcome will be of vital concern to the construction industry; on it rests the answer to this question:

How much federal money should Congress allocate for highways, housing, flood control, irrigation works and airport construction?

The contestants: A lame-duck Republican President turning more conservative as he enters the last two years of his final term; a Democratic Congress suddenly swollen with aggressive liberals.

The basic issue is the government's role in economic and social welfare.

How much should the government spend on these programs in a period of relatively high prosperity and low unemployment, recession-lowered revenues and defense-raised budgets?

President Eisenhower demands stark economy in the requests his departments and agencies present to the 86th Congress, convening January 7. Last week he promised to send a balanced budget to Capitol Hill.

Congressional Democrats think the President's vision is cloudy. They believe the voters' refuted his philosophy on election day. Many Democrats campaigned, and won, with a platform calling for more expensive programs in education, slum clearance, highways, health and scientific research, and aid to chronically depressed regions.

The veto, and the threat of veto, will force the liberal majority in Congress to compromise in many cases.

All the promises can't be kept, but, generally, 1959 will bring bigger, more expensive government.

Here's how the major construction issues shape up in advance of the new Congress:

1. Housing: Showdown

Congress will come up with a big omnibus housing bill, larger than the one blocked this year. This will ring in one of the first legislative battles of the new Congress.

The Democrats were out-maneuvered on housing in the last Congress.

Early in the year Congress voted $4 billion in new mortgage insuring authority for the Federal Housing Administration. Then, later in the session when Congress produced an omnibus bill loaded with pet Democratic housing proposals, the liberals among them found themselves with not enough leverage to push it through. Conservative House Democrats killed the bill.

Now FHA again needs an immediate mortgage insurance authorization. It is preparing to ask for over $6 billion. Democrats may vote $1 billion or so, just to keep the FHA program from faltering.

But it's certain that this time they'll hold back the bulk of FHA's authorization for the omnibus bill. This maneuver will almost guarantee broad new housing legislation.

Here's what to look for next year:

• **FHA—Some $6 billion in new mortgage authority and some liberalization in terms.** Liberalization measures being talked about are these: lowering down-payment requirements; reducing the one-half point insurance premium; and raising the mortgage limits to $30,000 on one-family homes, with corresponding raises throughout the whole program schedule.

• **VA—Extension of the program for both World War II and Korea veterans and a possible new program for those who served since 1955**—the existing cutoff date. There is little chance that Congress will raise the interest ceiling above 4.75%.

• **Urban renewal—It will go through in a big way.** Congress may authorize federal grants of $300 million to $600 million a year for as many as 10 years. Up to $150 million of this will be available in "accelerating funds" for any year needed.

• **Public housing—Liberals are talking about authorizing up to 200,000 units a year.** But a battle is shaping up. President Eisenhower's idea of a public housing program is about 35,000 units a year.

• **College housing and related facilities—The Administration wants $200 million** to take care of loan applications through next June 30. **But the Senate's bill for college and hospital construction will come closer to $775 million**—the same as in the 1958 omnibus measure.

2. Schools: A Fighting Chance

The 86th Congress just might take a historic step and accept the liberal theory that the federal government does indeed have a responsibility for helping to build and maintain a sturdy system of public schools.

One thing is clear: Legislation for federal aid to school construction will have a better chance in 1959 than ever before. That's because of the increase in the number of liberals in Congress.

Problems—both financial and emotional—cloud the outlook.

School legislation would put a dent in the budget and, once started, would become a continuing major program of spending. The bitter resistance in the South to school desegregation adds spine to the reluctance of conservatives from all regions to vote a program that

. . . Congress' efforts to swell public works outlays may be thwarted

could—theoretically or actually—extend federal control over a state or local body.

A school construction bill might look like this: A four-year program with Washington paying $25 the first year, $50 the second, $75 the third and $100 the fourth for each school-age child. Total cost: $1.1 billion the first year, $4.7 billion by the fourth year.

As a concession to states' righters, the sponsors would give the states discretion on the money's use for either building schools or raising teachers' salaries, or both.

Such a bill would travel through Congress under the shadow of a probable Presidential veto.

3. Airports: Classic Test

Nowhere is the conflict between the President and Congress more clearly drawn than in the battle over federal aid for airport construction.

President Eisenhower this year vetoed Democratic Sen. Mike Monroney's $475 million, four-year federal-aid program. Congress will push it again and the Administration will object again.

In its place, the Administration will offer a less grandiose program—probably confined to runways and navigational aids. It would exclude terminal buildings, hangars and similar structures now eligible for federal help.

4. Public Works: The Ax?

The Administration will put the brakes on public works projects unless there is another economic downturn.

Despite Congressional appropriations, public works spending is easy to control; when the time comes for spending, it's up to the Budget Bureau to release the money.

The last Congress came up with a $1 billion-plus omnibus rivers and harbors bill. The Army Engineers and Reclamation Bureau are going ahead with plans for spending that money on water resources work in the present fiscal year.

Public works lobbyists obtained Budget Bureau assurances that the full amounts Congress voted would be obligated for work in the coming fiscal year. (Nearly $900 million of the $1 billion total is specifically for construction—$670 million for the Engineers, $218 million for Reclamation.)

Since the agreement, however, the Administration started its drive to squeeze the upcoming budget. Those who follow public works programs closest now feel two things are inevitable:

- The Budget Bureau will refuse to approve spending any money in the new budget for new starts. To begin work now would cost little. But once work starts, appropriations in future budgets would be needed.
- President Eisenhower will fight against any new starts and against stepping up the rate of spending on works already in progress.

The National Rivers and Harbors Congress, a potent lobbying group, will put heat on Congress for even more money than 1958's record—probably $1.25 billion to $1.5 billion.

The outcome is anybody's guess, but here's a cautious prediction:

Congress will force White House assent to appropriations for a number of new starts (although less than the 64 authorized in 1958) and, also, a fairly good list of pending projects for construction in future years.

It appears, however, that whatever projects are lined up for future years will be approved in a series of one-shot legislative bills. There probably will be no new omnibus bill in 1959.

5. Military: Cuts Coming

It's a good bet Congress will vote at least as much for military construction next year as it did last year—and it may be more. But the Administration will spend what it wants—meaning less than what's voted.

Even so, chances are Congress will try to raise the ante by increasing the Administration's budget, as it did last year.

For this fiscal year, military construction outlays will come close to $2 billion.

For the new fiscal year, starting next July 1, the Administration wants to pare that amount by 10 to 15%. It also counts on reducing by at least 20% the $1.9 billion rate of new contract awards in this fiscal year.

6. Highways: A Problem

Spending for highway construction is expected to top $7 billion in 1959, compared with about $6.2 billion in 1958. So some hot issues must be solved next year.

Hottest is the state of the highway trust fund. It needs about an extra $1 billion if the schedule established in the National Highway Act is to be maintained.

The trust fund surplus built up in the first couple of years under the act is dwindling fast. It is estimated that the deficit between current income and outgo of the fund will rise to $200 million by the fall of 1959.

The problem in 1959: Raise new money.

Sen. Harry F. Byrd's pay-as-you-go provision in the program was lifted in 1958 for two years. Presumably Congress may be willing to grant another exemption, but the Administration says it does not intend to let highway building swell the Treasury's general deficit.

The Administration wants user taxes increased enough to bring in the extra needed money. The prime target is gasoline. Distasteful though it may be, Congress will hike the user taxes earmarked for the trust fund. Gasoline will be raised 1 cent, making it 4 cents a gallon.

7. Labor: Reform

A mild labor reform bill, patterned after the ill-fated Kennedy-Ives measure of 1958, seems likely to pass Congress.

The Administration won't be happy with any legislation that doesn't embody two of its key points. Here are the approaches:

- Democratic liberals, with AFL-CIO support, will bring out a bill similar to the Kennedy-Ives measure. It will concentrate on anti-racketeering provisions. This includes policing union officers and union treasuries, and setting up rules for elections giving rank-and-filers a bigger voice. There will be criminal enforcement provisions.
- The Administration—with some middle-roaders in Congress in support—will insist on banning secondary boycotts and "blackmail" picketing.

Both of the Administration's basic proposals would hit the building trades and the teamsters in particular. One would outlaw union pressure on an organized employer to help out against a non-union employer during a bargaining dispute. The other would forbid a union from picketing a construction site or plant after the employees had rejected the union.

Although Congressional votes seem assured for a moderate reform bill, the big hitch is Labor Secretary James P. Mitchell. He doesn't want any bill that fails to outlaw secondary boycotts or blackmail-picketing. But he refuses to say whether he will recommend a veto.

8. Power: Gains

Expansion of the federal role in electric power production will loom over all proposals.

An important aspect is atomic power. The Democratic-run Joint Committee on Atomic Energy has drawn up a long-range program that envisions spending $875 million for 10 or 12

reactors. This would make nuclear power competitive in the U. S. by 1970.

There's little doubt that a big program will be voted. The question is whether the projects will be federally supported in their entirety or built in partnership between the federal government and local private interests.

Then there are the perennial proposals. Some, like the Tennessee Valley Authority's self-financing bond program for expansion, are expected to have relatively easy sailing. Others, like Democratic Sen. Richard Neuberger's plan for a Pacific Northwest Development Corporation, appear to be at least one year from serious Congressional consideration.

Facing almost certain veto, if passed, is the recurrent proposal to undo Idaho Power Company's work on three low dams on the Middle Snake River by building a high federal dam at Hells Canyon.

Lots of action will develop around gorges of the Middle Snake.

This is the picture:

The Army Engineers recommend a high dam at the Mountain Sheep site. It would back up the Snake and Imnaha Rivers to the third low dam in Idaho Power's series of three downstream. This would permanently block a big dam at the Nez Perce site.

The Bureau of Reclamation opposes the plan. It prefers a high dam farther upstream at the Pleasant Valley site.

The fighting over counter proposals could possibly result in no 1959 Congressional action on a federal dam at any of the sites.

One issue Congress cannot avoid is solution of power development at the Trinity (Calif.) Dam.

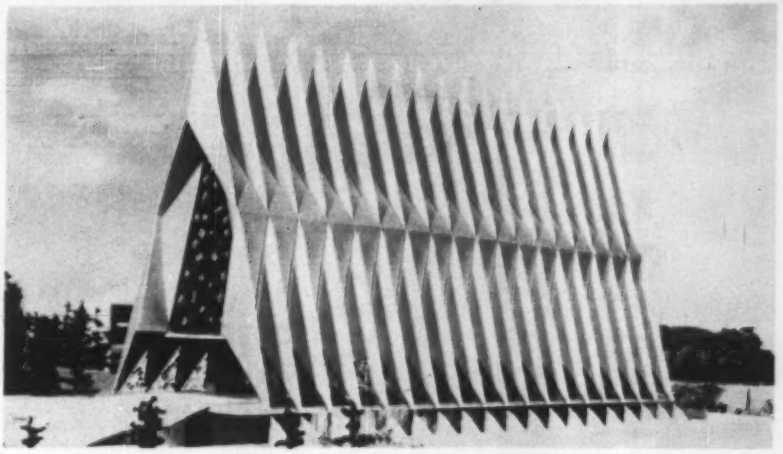
The Administration, under its partnership concept, has a proposal pending that would allow Pacific Gas & Electric Co. to build and operate the Trinity power facilities. Public power groups blocked this in the past. Now dam construction has reached the point where power facilities must be started during 1959. Congress will order federal development.

9. Taxes: No Relief

Taxes will stay high.

Wilbur Mills, chairman of the tax-writing House Ways and Means Committee, is a sincere fiscal conservative. He is reminding his fellow Democrats of the danger of the course they are embarked upon. However, he does not deny or decry the pressure for bigger outlays. Being a realist, he acknowledges the rise is inexorable.

Congressman Mills, the most important tax man in Congress, will not lead a fight for higher rates. However, he is warning that Congress may have to broaden the tax base.



Aluminum Chapel Ready for Bids

Bids will be opened about February 17 on a contract to build the interdenominational Air Force Academy chapel near Colorado Springs, Colo.

Invitations to bid will be mailed to prospective bidders on January 2, reports the Air Force Academy Construction Agency (AFCA), in charge of the project. Construction is expected to take about 18 months.

Construction was approved by Congress and funds were earmarked for it. The chapel features 17 soaring aluminum spires, alternating with stained glass panels. There are separate naves for Protestant, Catholic and Jewish services. It will seat 1,500.

The two-story structure with basement will have a total floor area of 54,000 sq ft. The Protestant nave, on the upper level, will seat 900. The Catholic and Jewish naves, on the lower level, will have 500 and 100 seats, respectively.

Exterior walls and roof will have steel framing and aluminum facing, fixed windows and precast concrete panels. Concrete block and wood panels are to make up the interior partitions.

Skidmore, Owings & Merrill, Chicago, are architects-engineers for the entire academy building program. Walter A. Netsch, Jr., a general partner, is credited with the chapel concept.

Germans Drum Up a Bridge

Old oil drums are playing an important role in the construction of the Kochertal Bridge being erected near Heilbronn, West Germany. The drums will serve as forms for voids in the monolithically placed concrete of the diaphragms and deck of the new structure.

To clear the Golden Gate Bridge, record-size mobile offshore platform had to lower its legs.

Biggest Work Stage Goes to Sea

The biggest mobile offshore platform ever built went to sea last week in California. It is a half-acre, 4,500-ton barge with legs 275 ft high.

The rig will be used to lay five miles of concrete pipe 12 ft in diameter as an effluent outfall for Los Angeles' Hyperion Sewage Treatment Plant.

In moving out of San Francisco Bay from Richmond, Calif., where it was fabricated, the platform probably became the tallest marine structure ever to pass under the Golden Gate Bridge. The distinction was not without complications. To clear the bridge, the platform's 700-ton legs had to be jacked down into the water. And they had to be jacked up again to clear a sand bar to seaward from the Golden Gate.

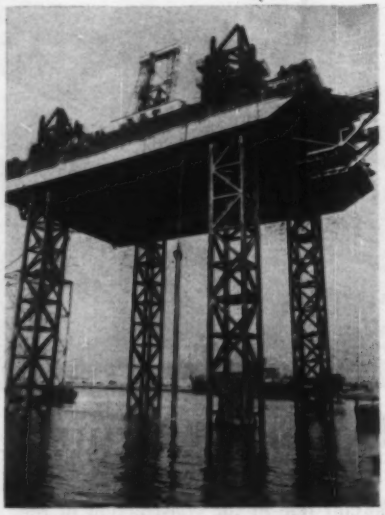
The barge is a 190 x 122½-ft work platform with a 17-ft-deep hull of watertight compartments. Hydraulic jacking mechanisms raise and lower the 17-ft-square legs through wells near the corners. With the legs lowered to the ocean bottom, the jacks can raise the barge out of the water.

In raised position, the platform will guide the heavy concrete pipe at the Hyperion job into place in 192-ft increments. Starting at the inshore end, where 4,000 ft of pipe has already been placed from a trestle, the platform will work its way seaward to a point more than five miles offshore and 200 ft deep.

In addition to the size of its platform, the rig is significant in that it will work in deeper water than any offshore mobile platform has to date. This could expand the horizons of offshore platform work.

When the platform reached deep water on its way through the bay, the legs were jacked down until they extended 62 ft below the hull and about 200 ft above water. This height cleared the Golden Gate Bridge by some 25 ft. (The bridge provides 220 ft clearance at high tide, but the platform passed under at low tide.)

On the sea side of the bridge, the legs were jacked up until the entire assembly drew only 27 ft of water. This was necessary to clear the sandbar outside the Golden Gate.



PLATFORM climbed its legs during fabrication, as it will on the job.

In deep water again, the legs were jacked down until the rig drew 49½ ft of water. This provided the stability needed for the 3-knot-per-hour, five-day haul to Southern California.

The rig was built in shallow water with the legs planted on the bottom. The barge was jacked up the legs as leg sections were added. An earlier attempt was made to do the job in deep water. With the barge floating, the legs were lowered as sections were added. Swift bay currents tore the barge loose from its moorings, however, and forced the builders to abandon this method.

The pipelaying contractor and owner of the mobile platform is Hyperion Constructors, a joint venture of Raymond International (sponsor), DeLong Corp., Healy-Tibbitts Construction Co., Peter Kiewit Sons Co., Macco Corp. and Tavares Construction Co. DeLong Corp. planned the rig, using principles designed for offshore oil-drilling platforms, radar platforms and pier assemblies.

The barge was fabricated by Pacific Coast Engineering Co. at Alameda. The legs were fabricated by Kaiser Steel at its Napa plant. The jacking mechanisms were made by Yuba Consolidated Industries. Judson Pacific-Murphy Corp. assembled barge, legs and other components at Richmond.

Congress to Get New Plea On Cross-Florida Canal

Florida's Congressmen will renew efforts in Washington this year to get federal money for the long-dreamed-of Cross-Florida Barge Canal. It would cost some $165 million.

The waterway would be a link in a protected water route from Trenton, N.J., to the Gulf of Mexico. It would connect the St. Johns River on the East Coast with the Gulf, using part of the Oklawaha and Withlacoochee Rivers.

Authorized by Congress in 1942 as a war measure, the project was recently approved by the Corps of Engineers as "economically feasible" for commercial use as well.

Construction of the big ditch was actually started in 1935 as a ship canal along the same route proposed for the present barge canal.

Appropriations were approved in 1935 as a relief measure to provide employment under the Works Progress Administration. But in the following year the job was stopped when the first appropriation was used up and Congress refused to provide more (ENR April 2, 1936 p. 479).

The latest plan calls for a high-level barge canal with five locks. Water levels in the canal would approximate the natural groundwater levels across the peninsula.

Two sizable lakes would be created along the midreaches of the Oklawaha River to provide increased recreational water areas. The canal would follow a dry-land cut north of the Oklawaha's lower reaches.

New York City Will Get $68 Million U. S. Building

A design contract for the largest federal office building ever to be built outside the Washington, D.C., area has been awarded jointly to three New York architectural firms.

The structure is a multistoried Federal Customs court and office building, to be constructed in New York City.

The Public Buildings Service of the General Services Administration awarded the contract to the firms of Kahn & Jacobs; Alfred Easton Poor; and Eggers & Higgins.

The cost-limit for the project has been set at slightly more than $68 million by Congress. The structure will provide about 1.8 million sq ft (gross) of space to house various federal government activities, including those of the local customs court.

The architects estimate that working drawings and specifications for the structure will be completed within 15 months.

It's Worth $1,000

Martin S. Kapp (right), foundation engineer of the Port of New York Authority, received the first Alfred A. Raymond Award from Maxwell M. Upson, chairman of the board of Raymond International, Inc., sponsor.

Raymond established the award last year to stimulate interest in foundation engineering. A check for $1,000 goes with the honor.

Mr. Kapp's paper, judged best among 29 entries, describes how a large area of unstable soil was consolidated by lowering the watertable temporarily by wellpoints, thus eliminating the necessity for a surcharge fill. Lowering the groundwater level reduced soil buoyancy, increasing the weight of an overlying sand blanket and effectively compressing the soft silt beneath.

Two other papers received honorable mention: "Construction of the Main River Pier, Mississippi River Bridge, New Orleans" by Charles W. Granacher, Dravo Corp., Pittsburgh, and "Underpinning a Wind Tunnel at Langley Field" by James F. McNulty and James S. O'Brien, National Advisory Committee for Aeronautics.

On the panel of judges were Ralph B. Peck, professor of foundation engineering, University of Illinois; R. E. Fadum, head, department of civil engineering, North Carolina State College; and E. A. Dockstader, consulting engineer, Boston.

Around the Country . . .

• **Wins disputed bid**—A contractor whose low bid was disputed because it didn't include an alternate has won out over his competition. The $12.5 million contract for construction of a seven-story hall of justice in San Francisco has been awarded to M & K Corp.

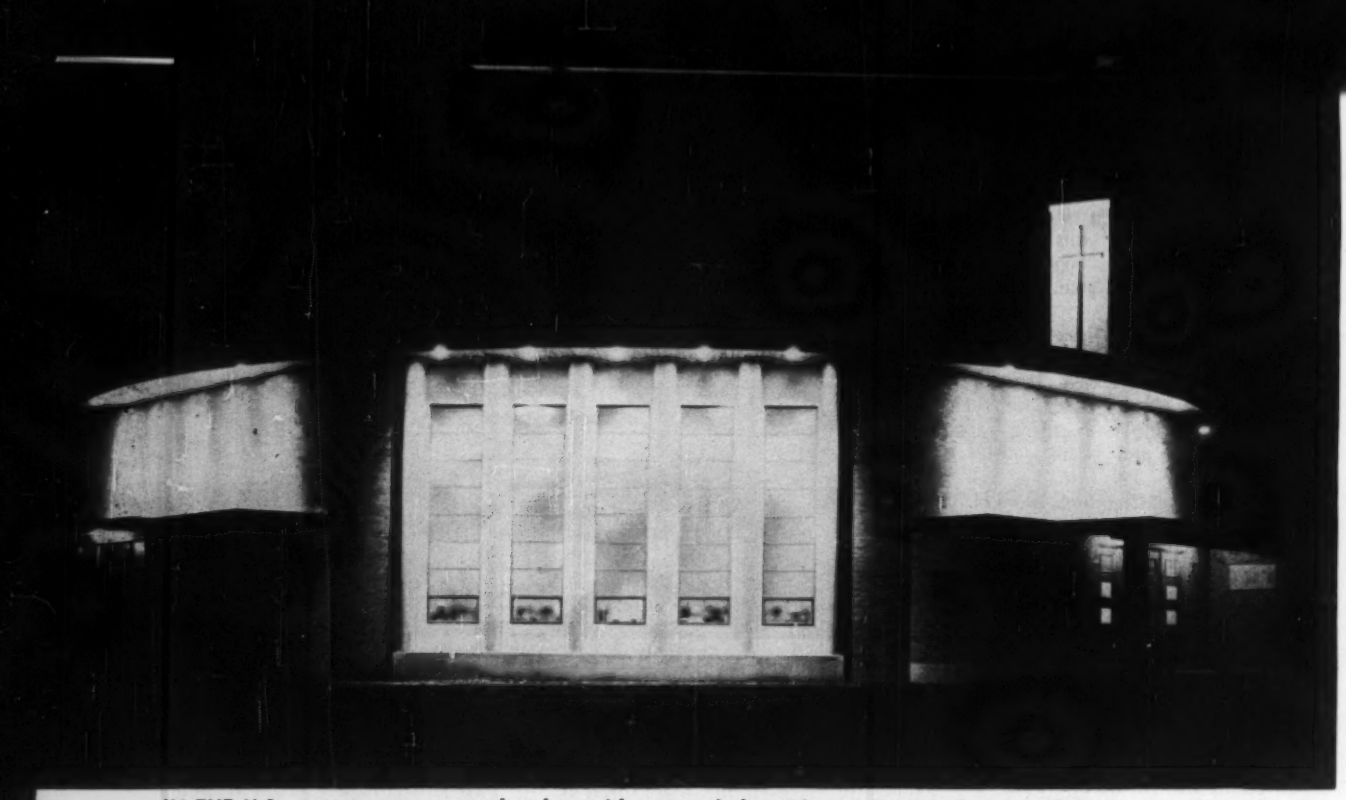
• **Feather River power**—Voters have okayed a $62 million bond issue for construction of a power and irrigation project on south fork of California's Feather River. Bids will be invited about February 1.

• **Federal aid for fireproofing?**—Chicago's Mayor Richard J. Daley says new schools are being built fireproof, but old schools, too, must be made so. He says "I'm not in favor of federal aid to schools, but . . ."

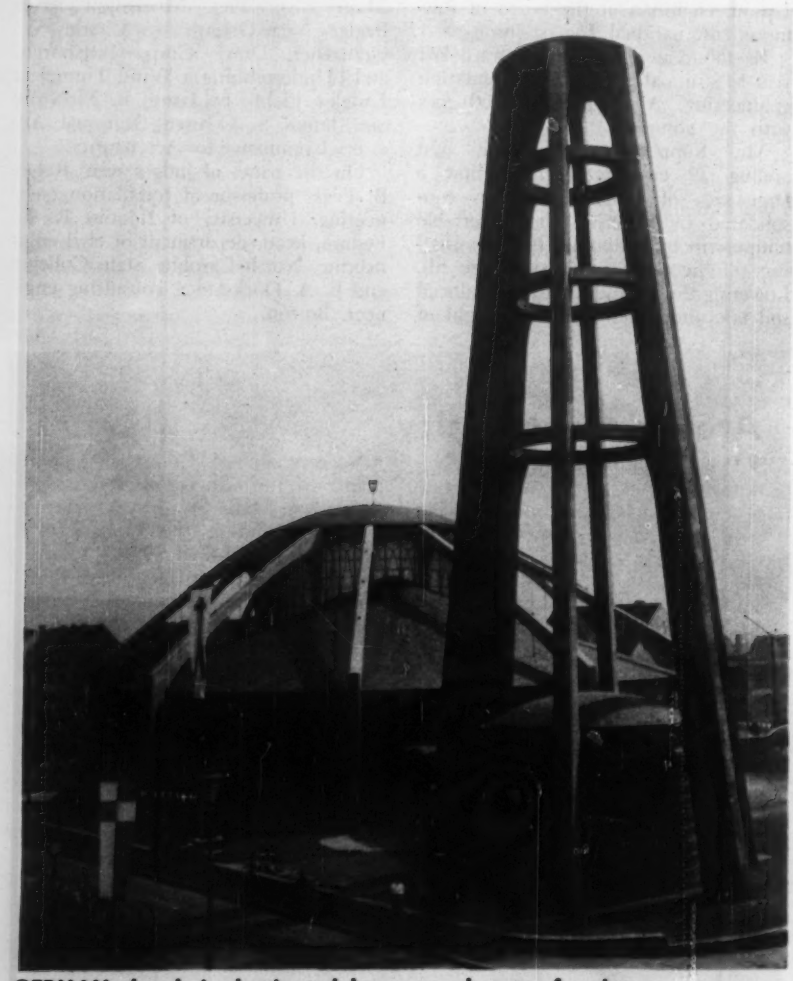
• **No cars allowed**—Columbia, S. C. plans to turn part of its busy downtown Main St. into a pedestrian mall during the Festival of Flowers next April. Traffic is to be routed around four blocks of the shop-laden thoroughfare.

• **New Peoria bridge**—The Murray M. Baker Bridge, a 3,217-ft-long crossing over the Illinois River at Peoria has been dedicated. The structure incorporates five spans of continuous-truss construction, cost $5.5 million and carries four lanes.

• **Whose responsibility?**—City and state highway officials are deadlocked over which Baltimore, Md., streets are part of the state highway system. The city's share of state highway revenues is involved.



IN THE U.S. among many new churches with unusual shape is an octagonal one in Holyoke, Mass.



GERMAN church is dominated by exposed, open framing.

Where They

Bells for the year-end holidays will toll in some strange belfries around the world. For many of the newer churches depart considerably from conventional Gothic, Byzantine and Colonial architecture.

We have come to expect in recent years unusual shapes for many types of low buildings—houses, schools, warehouses, markets, arenas, theaters—but until the second half of this century there was little evidence to suggest that the trend to new forms would extend to churches.

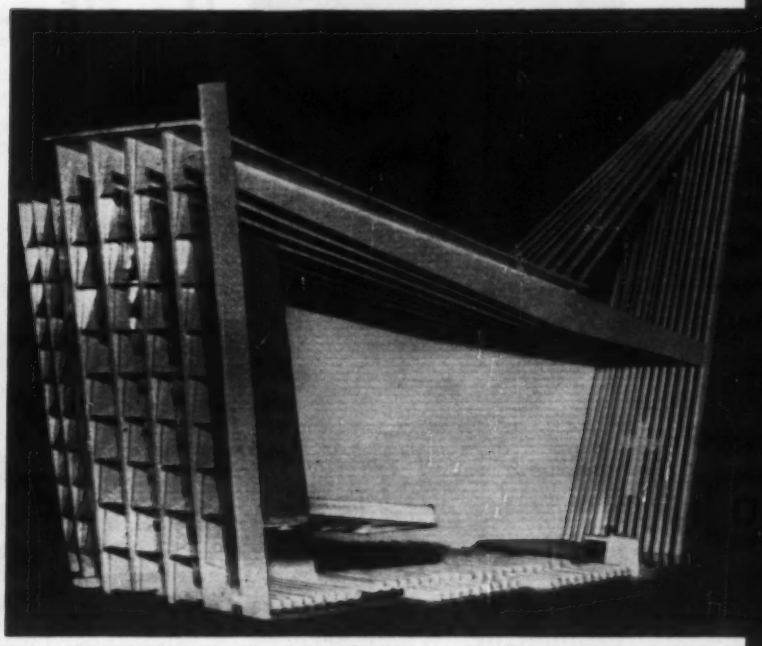
The old forms had served well for centuries; they were easily identified with religion. When you saw the characteristic Gothic, Byzantine or Colonial architecture, you almost always recognized the structure as a place of worship.

In contrast, the new forms, which are springing up in all parts of the world, do not always express clearly their function, perhaps because of our unfamiliarity with them. Nevertheless, they were designed to meet the needs of their congregations for space, esthetics and religious atmosphere.

Some examples of these unusual designs are illustrated on this and the next page. They include:

• **Octagonal church.** Designed by Chester F. Wright, architect, Waltham, Mass., for a congregation in Holyoke, Mass., it has a round roof on its eight-

IN GERMANY they come to this odd church.



IN NORWAY this church won a design competition.

Will Go to Worship on Christmas

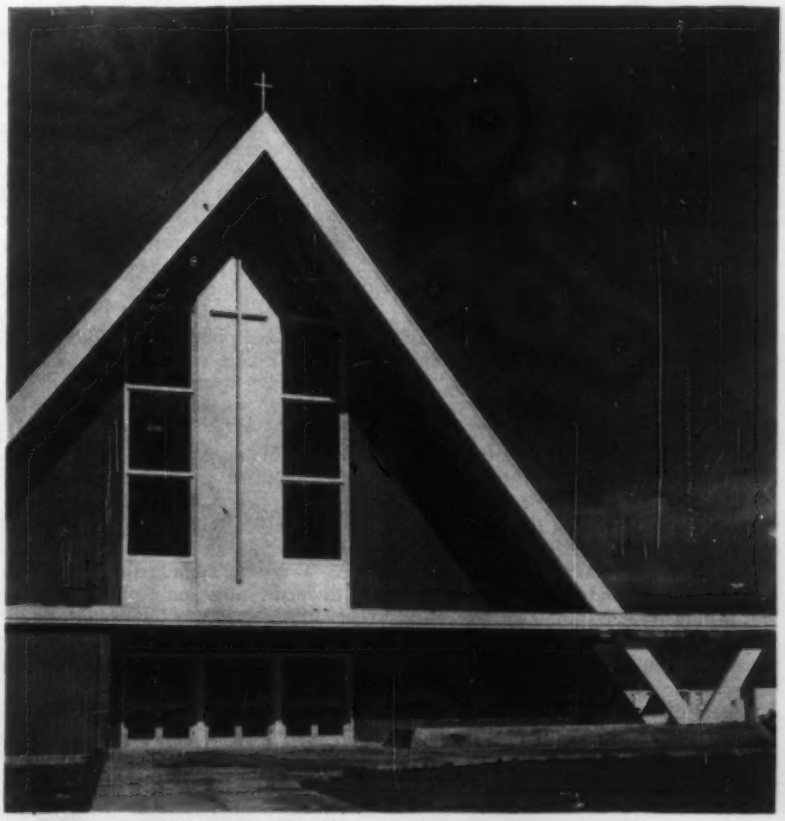
sided walls. A large cross marks its free-standing tower, which serves as both bell tower and chimney.

• **A-shaped church.** Laminated timber A-frames supporting the roof of this San Jose, Calif., structure are exposed and painted to emphasize the shape. Design was by Vincent G. Raney, San Francisco architect.

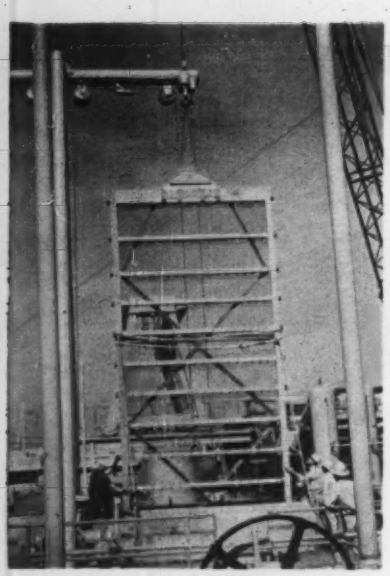
• **Exposed-frame church.** In Saarbrucken, Germany, this house of worship has three main elements: church proper, chapel and spire. The chapel is situated at the base of the open concrete spire, and the domed main building is girdled by a ring of concrete rigid frames. Dominikus Boehm, of Cologne, designed it.

• **Irregularly shaped church.** The design, for Kristiansund, Norway, by architect Odd Ostby, won first prize in a competition. Framing will consist of 16 concrete rigid frames with a span of about 115 ft. The roof girders will be prestressed and supported on sloping columns. To shorten the span, the girders will receive additional support from suspenders attached to upward extensions of one line of columns.

• **Greek-letter church.** Spire of this church in Hamburg, Germany, looks like the Greek alpha. And the roof of the auditorium, which will seat 800, forms the Greek omega. Reinhard Reimerschmid, of Munich, was the architect.



CALIFORNIA church looks from the front like a huge capital A.



Structural Plastic Beams Frame Huge Water Screens

Southern California Edison Co. is switching to glass-reinforced plastic (picture) from stainless steel for the structural frames of a number of ocean-water screens.

The non-corrosive properties of the plastic are expected to keep the screens operable in salt water for far longer periods than the steel frames, which need substantial maintenance after a year of service.

Twenty of the corrosion-plagued metal frames at three plants are being superseded by plastic. The new plastic frames measure up to 26½ ft high by 12 ft wide and are designed to resist a load of 25 tons.

Each of the vertical support members is one-piece construction of glass fiber impregnated with resin, and weighs about 300 lb. They have channel sections with web and legs 5 X ⅜ in. Horizontal members are box sections about 4¼ X 3¼ in. The frame members are joined by bronze bolts and epoxy adhesive. Each screen is fixed to a permanent boom and lowered into 36½-ft-high side channels. Plastic casters molded into the outside of the vertical support facilitate raising the screens for cleaning and repairing of mesh.

The plastic material, with the name of Uniparr, is produced under license by X-Port Oils, Inc., Los Angeles. Flexural strength of 80,000 psi, tensile stress of 70,000 psi and compressive strength of 50,000 psi are claimed for the material.

The mesh is made of bronze and lasts little more than a year. However, it's easily replaceable and constitutes only a small portion of the cost of the units.

How Russia Teaches Engineering

The standards of engineering education in Russia are high. Young Soviet engineers are well grounded and their best men are as good as any in the world.

But Russian youths are educated within an extremely narrow field and, for most of them, the concept of career has been reduced to a numbers game.

Those are the conclusions of the eight-man mission of U.S. engineering educators who returned last week from three weeks of study and inspection of 25 teaching and research institutions in the U.S.S.R.

The scope of engineering education in Russia is determined by the agency Gosplan, which administers the economic plans of the Soviet Union, according to the mission's report.

The current Seven-Year Plan specifies the number who may go into higher education; the number who may train for each field of specialization; the quota of each institution for each specialty; and the jobs that will be available at the time of graduation.

• **Narrow choice**—Each student must choose irrevocably an extremely narrow field of specialization when he applies for admission to college. Furthermore, he commits himself to work in this particular phase of industry.

The student is allowed to apply for only one field of specialization at one institution in a given year. If he is not accepted, he may not apply again until the next year.

Competition for admission to engineering schools is keen. The planned economy offers one opportunity for three to nine applicants, depending on the prestige of the college and the importance of the specialty. This leads less capable students to make their single yearly applications in fields and at schools where competition is low.

About one-third of the total enrollment of schools of engineering is made up of girls.

The available fields of specialization are tailored to the specific needs of the state. The various courses of study are narrowly defined. They prepare students to be useful immediately.

As a result, engineering in Russia is divided into some 160 separate specialties, such as mechanical engineer—automobile design, or mechanical engineer—automobile maintenance. In the U.S. there are about 20 accredited fields and the great majority of students are included in five fields.

The first two years of the 5- to 5½-year Russian engineering course are based broadly on mathematics and science. But the student's specialty is emphasized from the first day. The illustrations in mathematics, physics, chemistry and mechanics are designed to point up their application to his particular field.

The last 3 or 3½ years consist of increasingly specific courses, often built around design projects, industrial practices and an elaborate diploma project requiring a semester of full-time work.

• **But rewarding**—Why is this rigorous, straitening system so popular with Russian youth? According to the report of the U.S. delegation, "nowhere is the engineer and scientist held in higher regard than in U.S.S.R. . . . (They) are among the aristocracy of the Soviet Union."

A worker without a diploma seldom rises above the rank of foreman in Russia. This is considered the usual minimum for a graduate.

Although it is almost impossible to come up through the ranks, good engineering potential is not lost in Russia for lack of funds. There are state grants.

The mission found Soviet students extremely studious and purposeful in classrooms and laboratories. The only hazing they came across was of students who had done poorly in their work. About 90% of the successful applicants complete their diploma requirements.

The U.S. engineering educators said Russian programs of study were thorough and scientifically planned.

They agreed that engineering education in the U.S.S.R. cannot be compared realistically with that in this country, because it is tailored to quite a different system.

The U.S. mission was initiated by the Department of State under an agreement with U.S.S.R. for the exchange of scientific and cultural delegations. It was sponsored by the American Society for Engineering Education and the National Science Foundation with the cooperation of Engineers' Council for Professional Development. A comparable Soviet Educational mission is expected to visit here in February, 1959.

Frederick C. Lindvall, chairman of the division of engineering at California Institute of Technology, was chairman of the mission. Other delegates were William T. Alexander, Northeastern University; William L. Everitt, University of Illinois; Ralph E Fadum, North Carolina State College; Albert G. Guy, Purdue University; Newman A. Hall, Yale University; Ralph A. Morgan, Purdue Research Foundation, and Leon Trilling, Massachusetts Institute of Technology.

What Price Colored Buildings?

Ever since some primeval caveman rubbed the first streak of red ocher across the wall of his cave, man has tried to add color to his surroundings.

Today even man's skyscrapers are taking on festive hues. And judging by the growing number of colored buildings, owners have decided color is worth paying for.

Building designers like the trend: More than 90% of the architects surveyed by the American Institute of Architects say they prefer color for metal curtain walls—even at extra cost.

The growth of color was spurred by the recent development of thin curtain walls for tall buildings. Competition among metal-wall manufacturers led to color for their products. And traditional building material manufacturers followed. Result: More and better colored materials for buildings.

Here's a description of major color products for building facades, how much they cost, their merits and their drawbacks.

1. Porcelain Enamel

Colored porcelain enamel is becoming increasingly popular. A wide selection of colors and durability are its prime assets. U. S. builders used this product on 724 new curtain wall buildings between 1954 and 1957, according to the Porcelain Enamel Institute. And porcelain enameled panels have been used extensively to modernize exteriors of old buildings.

Porcelain enamel is an inorganic, glass-like coating that is bonded to metal by fusion at temperatures above red heat. The resulting product has the hardness of glass and the strength of the base metal.

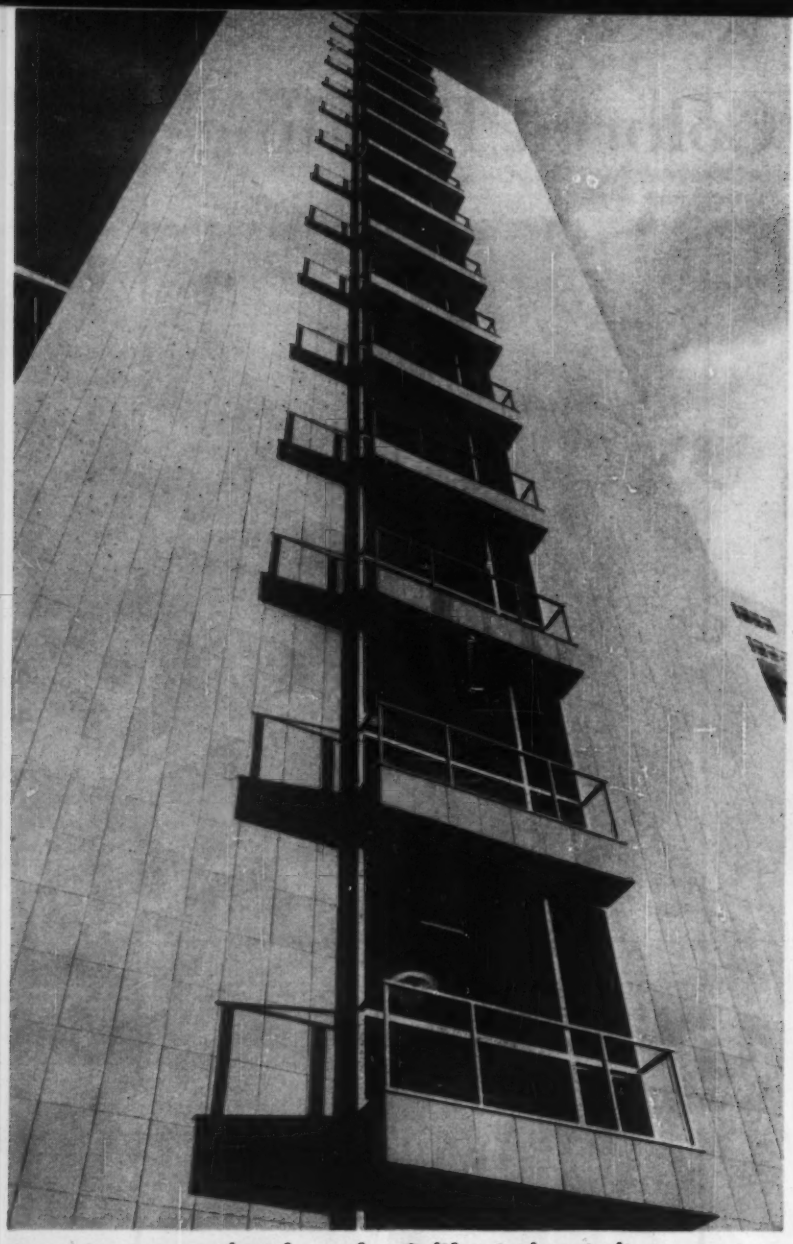
The enamel can be produced in almost every color and shade, in finishes ranging from high gloss to dull matte. Intricate panel designs can be formed by combining a variety of surface textures and colors.

The material requires little maintenance and has good weather resistance. Its inorganic surface wards off gases and acids. (A high gloss finish is completely acid-resistant; the matte finish still presents some problems.)

Its color will not fade, tarnish, craze or peel during the life of the buildings according to porcelain enamelers. And the panels get a cleaning every time it rains.

(*Continued on next page*)

Chicago's $3.5 million Mutual Life Building has a blue porcelain enameled steel facade.



Ceramic veneer colors face of a California hospital.

Steel and aluminum sheeting are the most common bases for porcelain enamel. Copper and stainless steel have also been used. Enamel on copper is translucent, so the natural appearance of the metal shows through.

• **What it costs**—One coat of colored enamel on a metal wall panel costs about 60 to 65 cents per sq ft. A second color ups the cost another 30 cents per sq ft.

Porcelain enameled steel is the least expensive of the popular enamel-metal combinations. But it has a drawback: The steel is subject to corrosion if the surface becomes chipped. When steel is used as a base, it's usually porcelainized on both sides and edges.

Enameled aluminum is more expensive than steel, but, with its greater corrosion-resistance, requires less enamel coating.

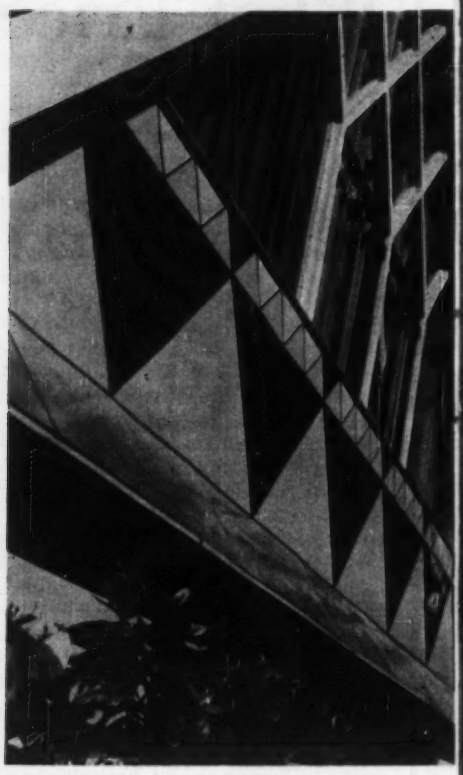
Benjamin B. Loring, vice president, Seaporcel Inc., offers this cost comparison: A laminated panel comprising a 1½ in. cellular glass core would have an 18-gage porcelain enameled face with a 24-gage galvanized steel back. The equivalent in aluminum would be a 16-gage porcelain enameled face with the same gage back. The steel-backed panel would cost between $1.40 and $1.50 per sq ft. The aluminum panel: $1.85 to $1.90 per sq ft.

But there are other criteria to consider in deciding between aluminum and steel porcelainized panels.

• **Steel is more rigid.** And, because it has a higher melting point, you can get it in a greater variety of textures.

• **Aluminum is lighter,** to be as stiff as steel it must be thicker.

. . . Varied materials



Porcelainized copper forms color

If the same work were done on copper as was done on the steel and aluminum described above, a 32-ounce copper would be needed. This would cost between $3.00 and $3.50 per sq ft, Mr. Loring says.

The price of stainless varies widely, depending on the gage used. It is usually more expensive than either steel or aluminum. But long-run costs may be cheaper for stainless because usually little maintenance is needed.

2. Anodized Aluminum

Color anodizing is another major method used on aluminum.

The recently completed 34-story, gold skyscraper in New York City (ENR Nov. 7, 1957, p. 28) was enclosed in 100,000 sq ft of gold anodized aluminum panels.

Anodizing is the application of a natural oxide film to the surface of aluminum by an electrochemical process (to provide added protection against weathering and corrosion). Inorganic dye is applied during the anodizing process and, as a hard coating of aluminum oxide forms, the dye becomes part of the metal.

Colors now available for exterior use are black, gold, blue-gray as well as aluminum's natural color. The color range can be further extended by using various aluminum alloys, since the alloys

 (Story begins on page 29)

spectrum on this parish house.

Porcelain enamel steel panels brighten Farmers Exchange.

also affect the color of the anodic film. Additional colors are now in the development stage.

Anodized color however, is not completely free of problems:

• **Color-matching of panels is difficult**—It's often a time-consuming task at the job site.

• **The permanence of some colors is still a question mark.** Tests indicate no appreciable fading with gray, black and gold—all inorganic dyes. Organic colors, however, are not as safe.

Aluminum is also being decorated with baked enamel and lucite coloring—a baked, resin vinyl coating. These processes have been used to a limited extent on several large aluminum buildings and a start has been made in applying baked enamel on the exteriors of small homes.

The National Homes Corporation will offer a prefabricated house in 1959 with baked enamel aluminum sidewalls and roof. Once the precedent is established, it may well spread to tall buildings.

• **What it costs**—There is no appreciable difference in cost between colored anodized aluminum and porcelanized aluminum. The question is: Which do you like better, the opaque quality of porcelain enamel or the lustrous quality of color anodizing?

A rough estimate by manufacturers places the cost of anodized panels at about 20 cents per sq ft. That's cheaper than porcelanized aluminum. But the additional time needed to match the anodized panels and the greater number of rejects during fabrication of these panels just about eliminates the actual cost differential.

Primarily because of the high rejection rate, colored anodized aluminum panels cost about 40% more than uncolored aluminum panels.

3. Stainless Steel

Thin curtain wall panels of black stainless steel are now on the market.

Three methods of coating can produce a dull, black surface: an acrylic coating; an inorganic, baked-on coating; and various oxide processes.

An unusual, baked-on blackening process has been developed by the Electro Metallurgical Co., a Division of Union Carbide. It's unusual in that metal parts can be severely formed after coloring without cracking or glazing the surface.

Union Carbide is using this facing on its own 52-story building, now going up in New York City. Similar black sheets were used previously for the walls of Atlas Steel's new building at Welland, Ont., Canada.

Black is the only marketed color for stainless so far (except for the procelanized coloring methods). But a range of gray shadings can be achieved by varying the size of the area covered by black finish.

Other colors—primarily golds and bronze—are now being developed for stainless.

• **What it costs**—Black stainless steel is expensive, compared with colored steel and aluminum, since stainless steel itself is more expensive than the other metals.

However, its high corrosion resistance, durability, good strength-weight ratio and attractive, natural tones have produced at least a limited use for stainless steel.

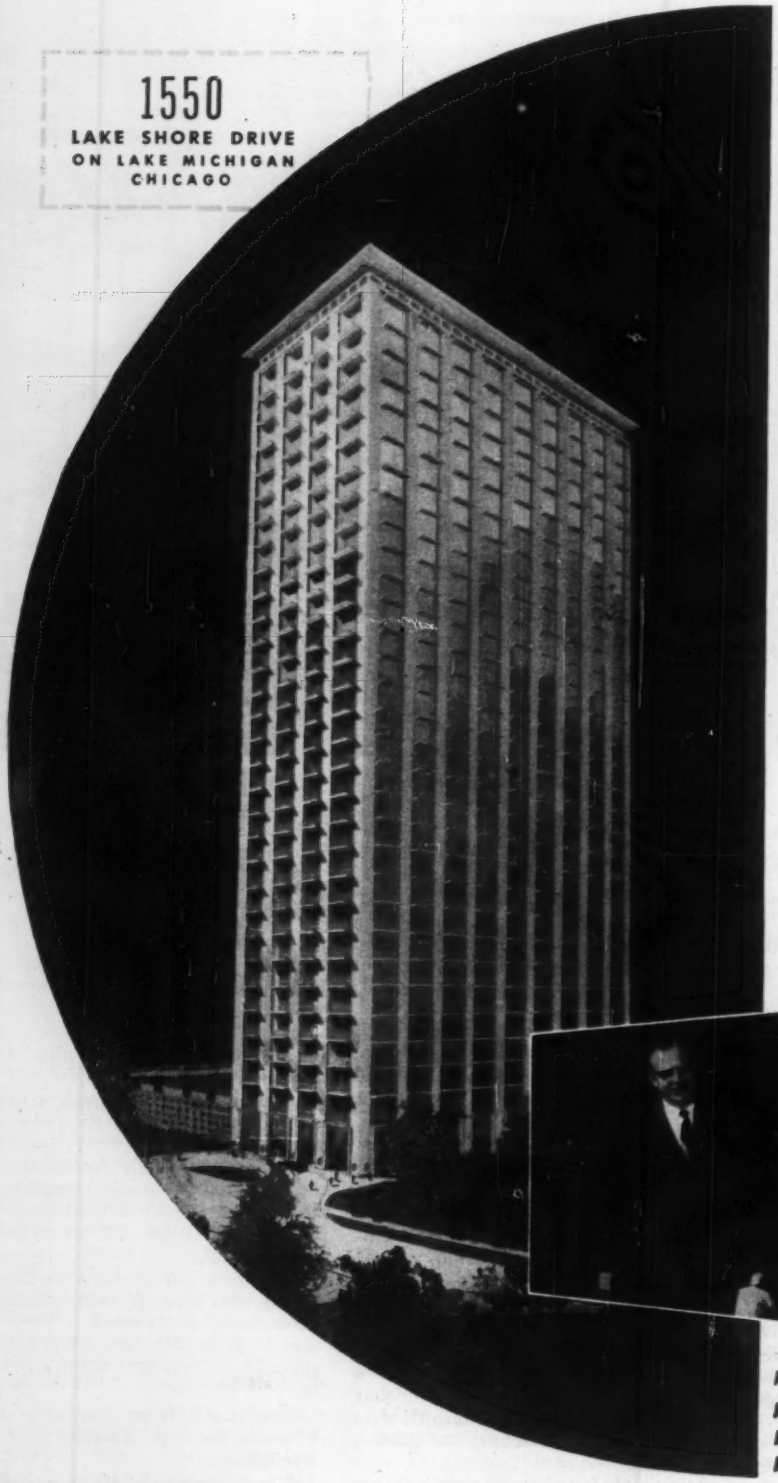
The cost of blackening with baked-on coating adds 40 to 50 cents per sq ft to the cost of natural stainless steel.

4. Glass

Glass is also being used in a variety of colors, both as windows and walls of buildings.

Where spandrels are covered with glass, it is usually colored glass, coated with enamel on the back. "Window-wall" buildings are frequently tinted green or gray—sometimes for better glare reduction and heat absorption,

1550
LAKE SHORE DRIVE
ON LAKE MICHIGAN
CHICAGO



39 STORY
Luxury Apartment Building founded on CASE
"Caisson Foundations"

Suitable bearing was reached after penetrating approximately 65 feet of saturated sands and soft glacial clays. Foundations were completed well ahead of schedule. Substructure PROBLEMS were minimized by Case Foundations.

ARCHITECTS and ENGINEERS:
Shaw, Metz & Dolio
Chicago

GENERAL CONTRACTOR:
Crane Construction Company Chicago

Reading from left to right:
Mr. Morton J. Crane
Mr. Carl A. Metz
Mr. Stanford E. Case

CASE FOUNDATION COMPANY

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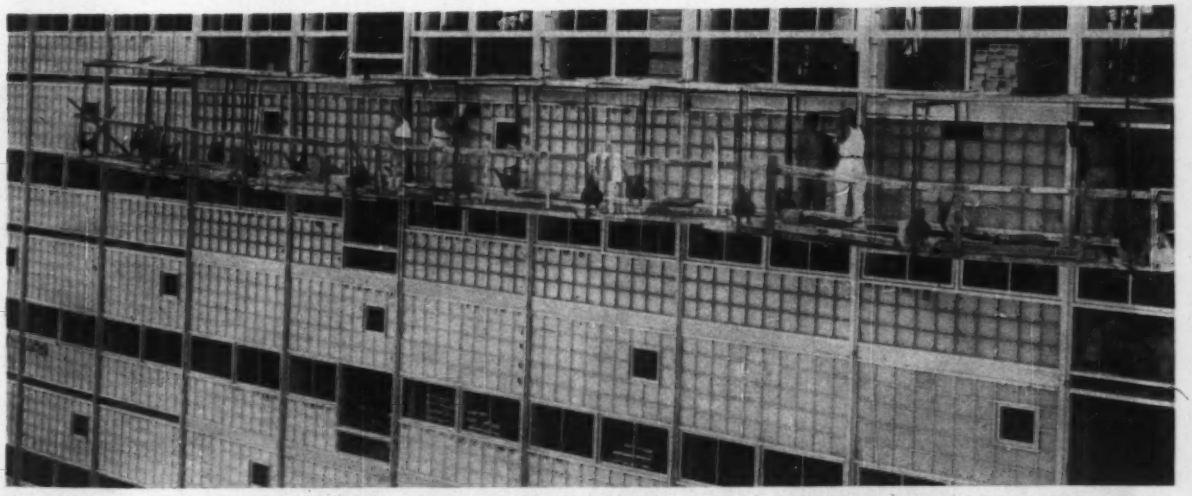


Green-tinted glass blocks enclose this New York City school.

but often for dramatic effect as well.

Structural glass block also comes in a variety of colors. A recent example of its use is the seven-story School of Printing in New York City (ENR Feb 6, p. 29). The exterior walls are green-tinted glass blocks, interrupted only by a 3-ft-wide horizontal strip of clear glass on each floor.

A prefabricated colored glass block wall has been developed by Owens-Illinois Glass Co. This lightweight system eliminates the need to mortar individual blocks in the field.

The panels are made of hollow glass units, 2 in. thick and 12 in. square. The panels come in 4 and 5-ft dimensions and interlock with one another.

The colored glass units are of two types: sprayed units that have good light transmission; and ceramic ones that are used just for decorative purposes.

Sprayed colors are applied to the inside surface of the outside half of the glass while it is still hot. Ceramic colors are fired on the outside face of the units.

Glass block panels are now being installed primarily on industrial buildings and schools. They are, however, adaptable to tall building installations, the manufacturer claims.

• **What it costs**—Ceramic face glass units are more expensive than sprayed units because they require a double firing process. However, when bought in prefabricated panels—a 2-x4-ft panel of ceramic faced units cost only 25% more than a comparable sprayed unit.

Price of other glass and glass block varies widely depending on the installation.

5. Clay Products

The structural clay products industry has kept pace with the demand for

Black stainless steel curtain wall clads Canadian building.

color. Glazed brick, tile and ceramic veneer (architectural terra cotta) are produced in a pallet of colors.

Many glazed brick and tile buildings have been erected recently. Colored brick also can be used with colored metal curtain walls. The gold skyscraper, for example, has two walls of anodized aluminum and two of gold brick.

To obtain a glaze, structural clay is colored with a sprayed metallic oxide. Changes in the composition of the glaze are used to determine the color of the final product.

The glaze seals the brick against grime, smoke, acid and other impurities. Its color is permanent, doesn't fade and can be cleaned with soap and water, says the Structural Clay Products Institute.

The structural clay industry has also produced two offerings for the altar of prefabrication.

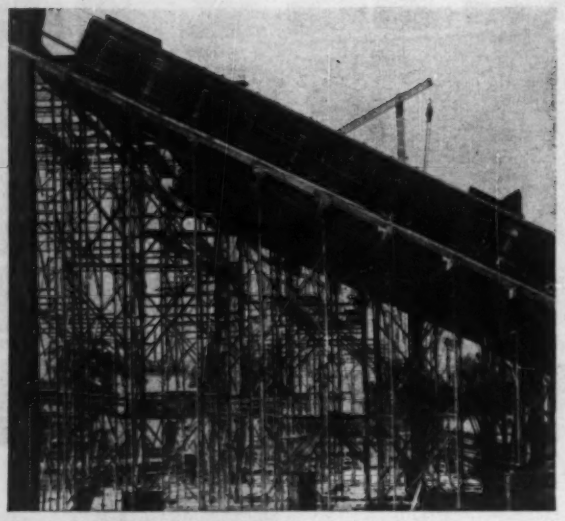
"CV Panelwall" answers the demand for a lightweight, prefabricated clay masonry panel. It is a 3-in.-thick, precast panel made of colored ceramic veneer with a lightweight aggregate concrete backup. It comes in sizes up to 30 sq ft and weighs about 30 lb per sq ft. A variety of finishes are available.

• The "SCR building panel" is a prefabricated panel made of brick, facing tile, or architectural terra cotta. It can be made in widths of from 12 to 24 in. And in any length up to 12 ft. It has a 2¼ in. thickness. This panel is load bearing—differing from the CV Panelwall, which is nonload-bearing. It is produced in color.

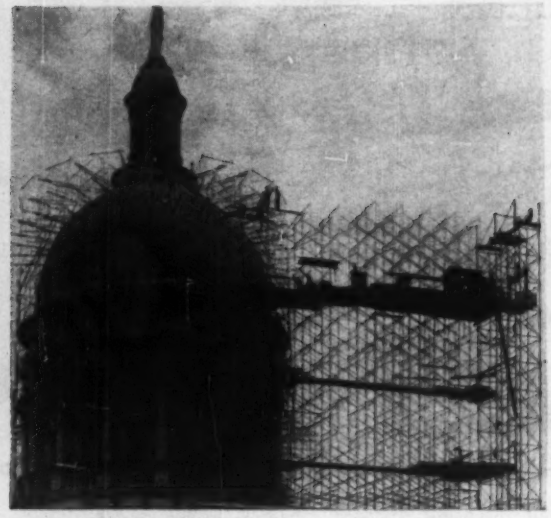
• **What it costs**—The price of structural clay units depends on local conditions. However, the price of glazed brick is higher than face brick, chiefly because the application of glaze is an extra manufacturing process.

There is also an extra shipping cost. Glazed products are usually packaged in individual cardboard cartons to protect their surfaces.

In New York City a glazed brick wall would cost not more than 50 cents more per sq ft than an unglazed face brick wall. The additional cost per sq ft of ceramic veneer over unglazed face brick would be about $2.00.



QUICK SHORING FOR RISER GIRDERS—To support concrete riser sections of the new Los Angeles Memorial Sports Arena, contractor, L. E. Dixon Co., quickly assembles "Trouble Saver"® Shoring frames, spaced 5' apart, to meet slope and weight requirements. Adjustable legs provide exact heights for stringers and form work. Risers average 5" thick by 1'3" high, and treads 2½" thick by 2'8" wide. Welton Becket and Associates, architect.



EASY ACCESS FOR GOLD DOME WORK—Prefab "Trouble Saver" Sectional Steel Scaffolding components build up rapidly to provide easy access for materials and renovation workers on the State Capitol dome, Atlanta. Thomas Bradbury Assocs., architect. Thompson-Street Co., gen. contr. R. F. Knox Co., sheet metal contr. Local citizens contributed all the gold used on the new dome.

Scaffolding Methods . . . by Patent Scaffolding Co.

EXACT LEVELS PROVIDED—"Gold Medal"® Junior Safety Swinging Scaffolds, hung from the roof give these men exact working levels needed for applying stainless steel facing units. Columbus and So. Ohio Electric Co. bldg. Universal Corp., panel contr.

FAST SUPPORT FOR HIGHWAY BRIDGE—Prefabricated "Trouble Saver" Shoring sections are simply fit together to form towers which are spaced apart to take the required load of the new Webb Hollow Road bridge section of the Empire Stateway, Onondaga Co., N. Y. Wm. F. Bouley Constr. Co., Inc., contractor. Complete, accurate, engineered shoring layouts, supplied by PS Co., provide the safest, most efficient and economical shoring for the job. Included are recommendations for joists, stringers and other necessary components.

Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

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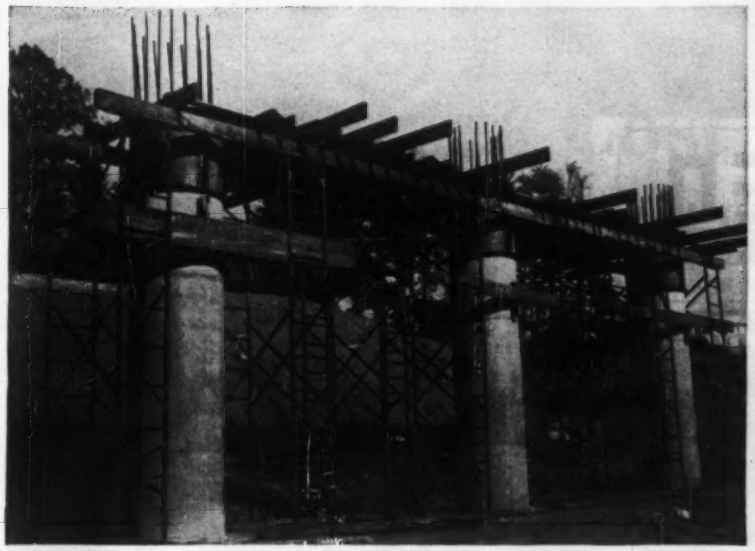
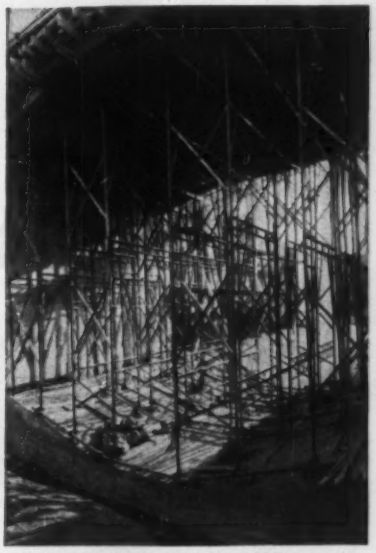
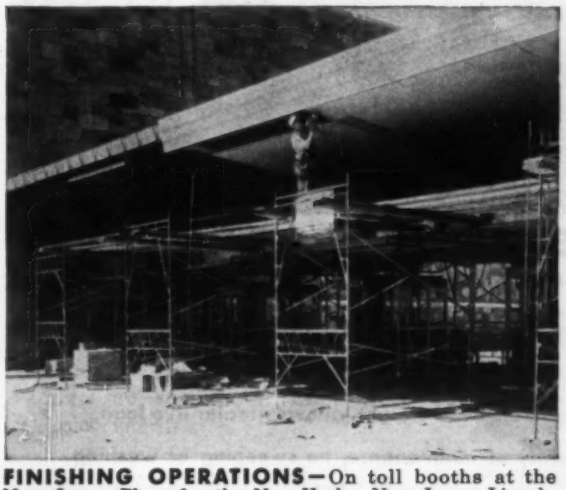


QUICK PIER BEAM SUPPORT—"Trouble Saver" 2'-wide Ladder Scaffold frames spaced 5' apart help contractor, M.D.A. Construction Co. provide easy access for forming work and support for one of 20 bridge piers on the Cross-Westchester Expressway, White Plains, N.Y. This photo shows forming and support for a pier beam 42"x48" deep, 14' high. Many users of "Trouble Saver" Shoring say "its ease of handling means quicker job completion." Complete, accurate shoring layouts are a regular part of PS Co's engineering service available thru nation-wide offices or representatives that *sell* or *rent* "Gold Medal"® Scaffolds.



CONFORMING TO CURVES—Guy F. Atkinson Co., contractor, uses "Trouble Saver" Shoring to support Pacific Electric Ry. Co. concrete bridge, Los Angeles, over a sloped concrete channel base. Adjustable legs help meet both curves, top and bottom. Note 4" steel I-beams as stringers, furnished by PS Co.

Shoring Methods . . . for Highway Construction . . . by The Patent Scaffolding Co., Inc.



FINISHING OPERATIONS—On toll booths at the New Jersey Plaza for the New York—New Jersey Lincoln Tunnel these "Trouble Saver" fixed Scaffolds are used to provide safe, level platforms for finishing work. The scaffolding components used here are the same as those used for shoring operations. By assembling them in towers and spacing to take the load, practically any shoring job can be done.

EASILY HANDLED BRIDGE SHORING—5'-wide prefab "Trouble Saver" Sectional Steel Shoring frames are handled easily by the crew for T. M. Page and RCT Corp., joint venturers, to obtain the correct support for the Cajon Blvd. Bridge over Devil's Creek Diversion Channel, San Bernadino, Calif. Two 6'6"-high frames, with extension legs, give 14' height. 4" steel I-beams used as stringers. 3'7" spacing between frames.

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Fourth Quarterly Round up:

In This Cost Report . . .

- **Labor is the dominant theme in ENR's fourth quarterly cost roundup. Subjects covered: costs, wages, fringe benefits, compensation insurance, losses from job injuries, work stoppages.**
- **Over-all cost movements and prices are updated too, along with a forecast of what will happen to costs next year.**
- **Here's a summary of the major sections . . .**

Outlook for Costs in '59

ENR forecasts that its Indexes of basic Construction and Building Costs will rise for the tenth consecutive year. Upward momentum is almost as great now as a year ago. **Page 39**

Soaring Wages to Escalate Costs

Big increases in construction wage rates year after year have accounted for most of the rise in basic construction costs. The trend to long-term contracts providing for future wage raises helps perpetuate the long record of wage increases. **Page 40**

ENR Construction Wage Roundup

Wage rates for 28 construction trades in 54 cities on November 1, 1958, are compiled by ENR. This record shows fringe benefits, overtime premiums. **Page 42**

Gains in Wages, Earnings

ENR and the U. S. Bureau of Labor Statistics measure the gains construction workers have won in higher wages, higher earnings and a shorter workweek. Their earnings are much higher, rising faster than in manufacturing industries. **Page 44**

Strikes Are Increasing Idle Time

The loss of man-days on construction jobs due to strike activity is on the increase. The larger number of major strikes in 1958 indicates that the 1956-57 uptrend continues. **Page 46**

Work Injuries: Down, More Severe

Better safety programs on construction jobs cut the number of work injuries in 1957. But accidents tended to be more severe, resulting in more man-days lost per disabling injury. **Page 46**

Compensation Insurance Rates

Compensation insurance rates are an important cost factor, adding to each $100 paid the construction worker. The November 1, 1958, rates for 49 states (including Alaska) are given. **Page 47**

Building Cost and Price Indexes

Building contractors' selling prices are turning up because of the new push by higher costs of materials and labor. Contractor price indexes and weighted cost indexes are updated. **Page 48**

Heavy Construction Indexes

Highway contractors in many states are bidding lower prices on new jobs than a year ago. Only two states report a rise in bid prices. Cost of irrigation and hydro projects are also down. **Page 52**

Monthly Wage and Price Reports

This month's regular 20-cities reports on construction trade and equipment operator wages and prices of construction materials. **Pages 54, 56**

School Prices Beat Cost Rise

Contractors' prices for new school construction in New York City this year are the lowest in two years. Prices of schools in New York State show little change during 1957 and 1958. **Pages 68, 75**

Other Cost Features

New Twist: Contractor Retains the Architect **Page 59**
How to Estimate Sewage Plant Costs Quickly **Page 64**
How Prices Dropped for Matching Schools **Page 66**

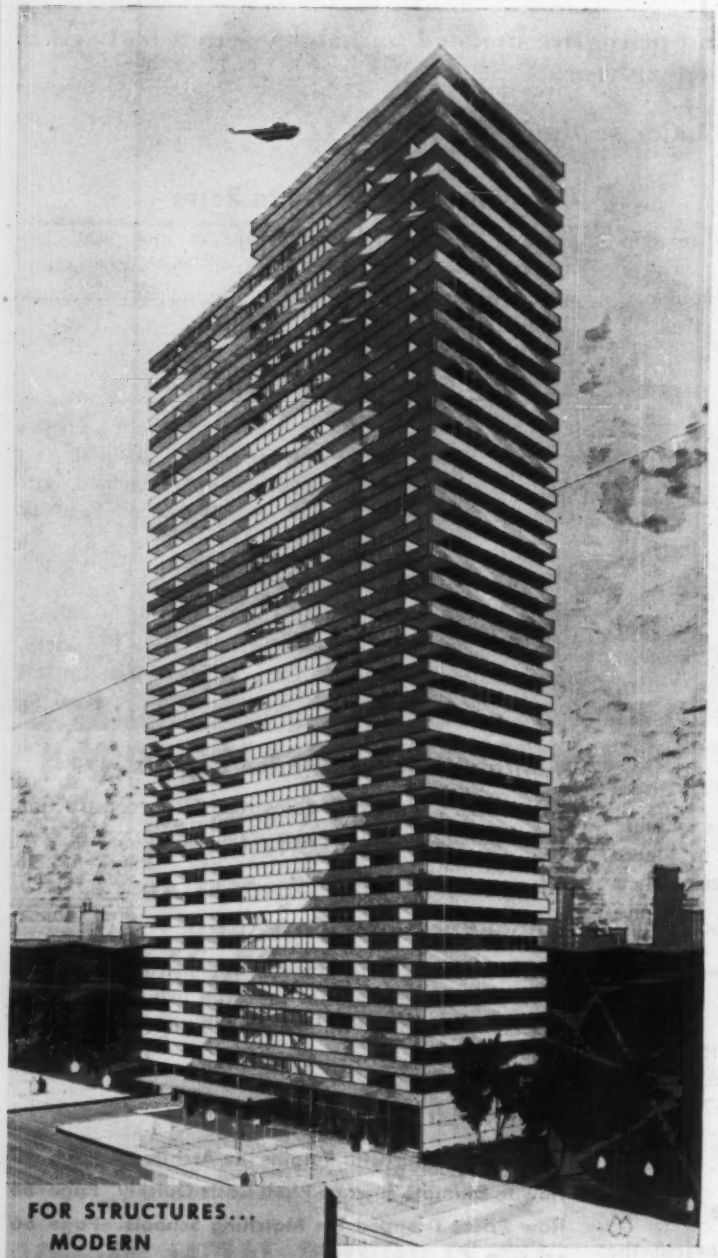
Unit Prices

Where the Building Dollar Goes **Pages 76, 78**
Other Unit Price Features **Pages 85-95**

Exclusive "Executive House" in downtown Chicago...

country's tallest concrete frame and floor building rises 40 stories in 371 feet!

WHEN AMERICA BUILDS FOR THE FUTURE...
IT BUILDS WITH CONCRETE

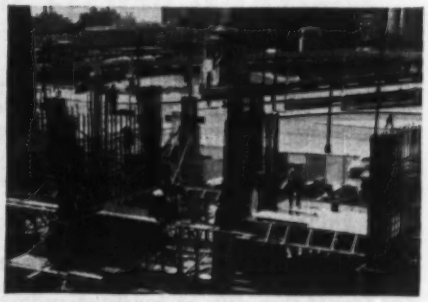


This impressive $6,000,000 building with its 446 apartments brings luxury living to Chicago's business district.

On the 100 ft. x 150 ft. lot, space was at a premium. To make the most of it, architects Milton M. Schwartz & Associates, Inc., and the Miller Engineering Company, both of Chicago, chose *concrete*. With it, apartments are big... ceilings a full eight feet. Yet floor to floor height is only 8 ft. 10½ in. Plaster is applied directly to the concrete.

And concrete saved money—an estimated $500,000. It saved time, made easier scheduling, too. Concrete's always ready on short order.

Executive House sets a U.S. height record for concrete. Today, for high-rise buildings and monumental structures, more and more architects and engineers are turning to concrete.



Four concrete shear walls extending across the width of the building provide necessary resistance to wind forces.

FOR STRUCTURES... MODERN **concrete**

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Fourth Quarterly Round up:

Cost Outlook: Up Again

Construction costs will rise to a new high in 1959 for the tenth consecutive annual increase.

ENR forecasts a 4% rise in its 20-Cities Construction Cost Index by December, 1959. That will raise the index to 805, based on 1913 = 100.

ENR's Building Cost Index will rise 2.8% to 550.

These forecasts are based on the following predictions for key construction materials and labor:

- **Structural steel will rise 3.6% to $5.70 per 100 lb at three mills**--Birmingham, Gary and Pittsburgh. The increase of $4 a ton is less than 1958's $4.50 hike.
- **Portland cement prices will hold steady in all but six of the ENR 20 cities.** Increases of 15 cents per bbl in these cities will raise the U. S. average 1.1% above the current level to $4 per bbl. The six cities where price increases are forecast are Baltimore, Boston, Minneapolis, New York, Philadelphia and Pittsburgh.
- **Lumber prices will probably soften** during the next six months, then turn upward in the second half of 1959. By next December, the U. S. average for Douglas fir 2x4's will be $114.50 per Mfbm (1,000 board ft), a slight 0.5% under the December 1958 average. The southern pine 2x4 average is forecast to be $101 per Mfbm, 1.4% under the current price.
- **Wage rates will rise another substantial notch in 1959.** Many unions in the 20 cities will negotiate new contracts and other unions will receive deferred wage increases provided by existing long-term contracts.

Common labor rates on building and heavy construction will reach $2.614 per hour, including fringe benefits by the end of next year. This is 5.3%, or 13.2 cents per hour, more than the current average.

Skilled wages--average of bricklayers, carpenters and structural ironworkers should rise 4%, or 15.2 cents to $3.916 per hour, by December 1959.

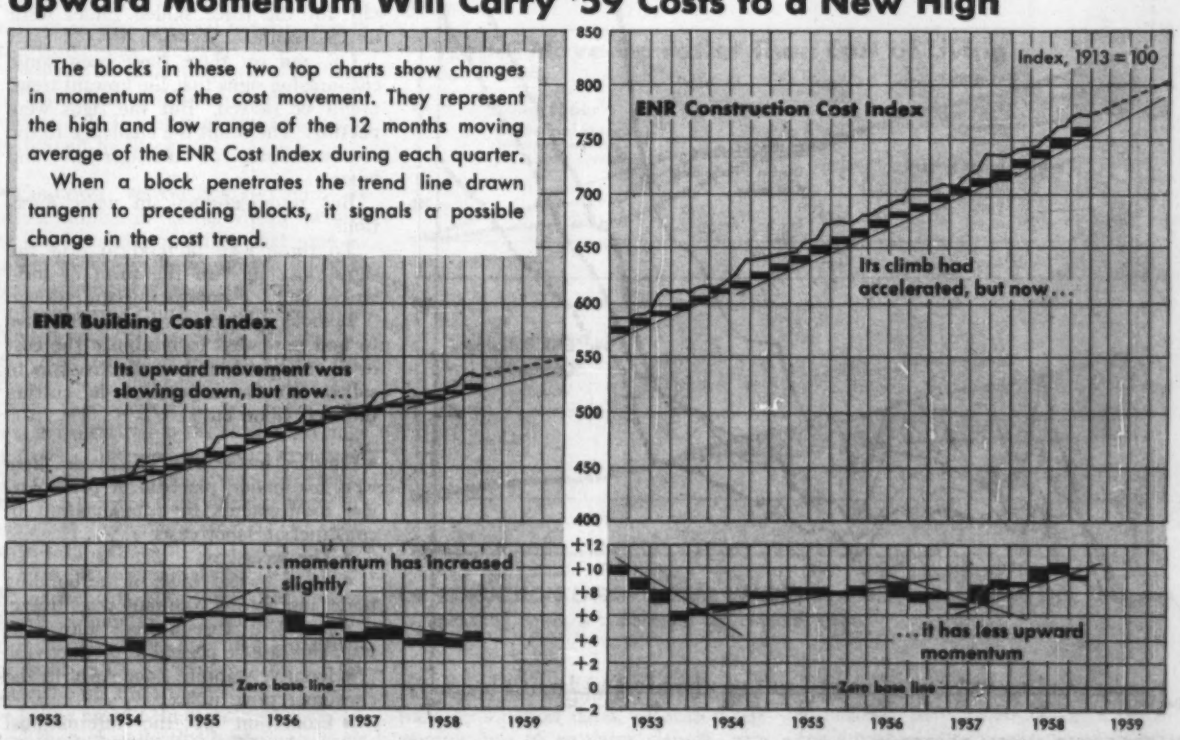
Contractors will pay more for construction equipment, rented or purchased in 1959 as compared with 1958. Most major equipment makers upped their prices during October-December of this year. Prices may again rise in the fall of 1959. Rental rates for equipment in 1959 will reflect the recent rise in prices of new machines.

The cost of money borrowed to finance construction may go down early in 1959. But it will probably increase by summer. Rather sharp swings in the cost of long-term borrowings are in prospect.

Contractors profits will be squeezed again next year. Higher costs of basic materials, labor and equipment will tend to push 1959 bid prices up. But stiffer contractor competition will produce tight bidding.

Selling prices will rise, but less than basic costs; certainly no turndown is in sight. The rugged competition for new work in the last two years trimmed contractor profit margins to marrow. The new year will require continued attention to cost control and good management.

Upward Momentum Will Carry '59 Costs to a New High

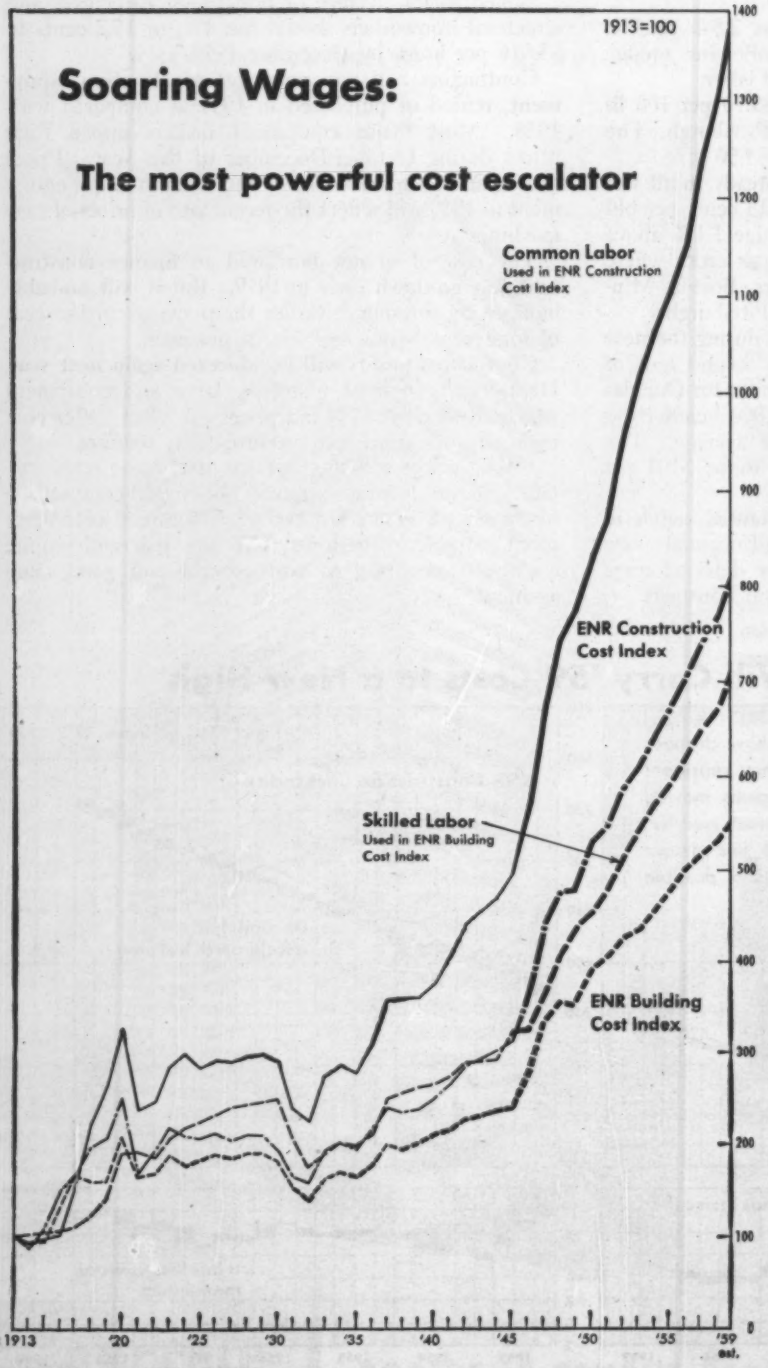


These bottom "Momentum Net Change" charts magnify further the short-run changes in the Cost Trend.

The blocks show what happens to the 12 months moving average during successive spans of three months.

Fourth Quarterly Round up:

Why Labor Costs Will Keep



INCREASING MUCH FASTER than over-all basic costs, common labor wages are 13 times their 1913 average; skilled wages are 7 times as great.

Unrealistic are those who think the rising tide of construction labor costs can be appreciably stemmed in the foreseeable future.

Construction wage rates have risen steadily for 23 consecutive years. During this period, common labor rates in 20 U. S. cities reported by ENR have increased by 369%. Rates for skilled workers went up 293%. As a result, higher wages are responsible for most of the rise in ENR's Construction Cost and Building Cost Indexes.

Since 1913, for example, common labor rates have soared 1,200% while the Construction Cost Index, which uses common labor rates for its labor component, has increased 674%. At the same time, the ENR Building Cost Index, which uses skilled labor rates as the labor component, has advanced 435%. Skilled rates (bricklayers, carpenters, structural iron workers) have moved up 576%.

This year, the strength of the upward trend in wages was put to a better test than any since the war.

• **What happened?**—Despite a number of factors that tended to depress the demands of labor, the common labor rate in ENR's 20 cities rose 13.8 cents an hour, including fringes. The average rate for the three skilled trades went up 15.2 cents.

Off and on there have been some encouraging signs that the upward trend might be slowed. But the signs were fleeting. The result is a challenge to the resourcefulness of management and labor.

But resourcefulness in what direction?

To those who pretend to read the signs, resistance in the form of local strikes and lockouts is not the answer.

It looks as if management will have to find new ways to minimize the cost of what it grants and an effective way to solicit labor's cooperation in cutting indirect labor costs.

• **Hurdles ineffective**—This year there were five major, practical or psychological inducements to a moderation of construction labor costs:

• The recession.

• A call by the leader of the building trades union for a voluntary wage freeze.

• President Eisenhower's plea that wage increase be pegged to productivity.

• Relative stability since April in the consumer price index.

• Promotion by the international unions of a 10-point code to eliminate wasteful work practices.

Going Up

There was also increasing union concern over the effect of rising construction labor costs on the craft union fight with industrial unions and the fear of some trades that high wage scales will invite use of substitute materials with resulting loss of jobs.

None of these, which represented top level thinking, made much impression on labor at the local level. It's a long way from the top to the bottom. Local autonomy is deeply imbedded. And the old adage, "You can lead a horse to water but you can't make him drink," promises to retain its verity for some time to come.

• **Upward pressures**—On the other side of the coin are a number of strong upward pressures that are here to stay.

Although the relative prosperity of the construction industry cannot be overlooked, the most significant factor is the basic philosophy of trade unionism. Unions stake their success on the economic and social progress of their members.

Labor's ever-present economic goal is a larger share of the economic pie for the workers. It believes that consumer purchasing power must be constantly swelled by higher wages to support an expanding economy. Success is measured in terms of a constant increase in real wages and in social benefits, which the fringe area represents.

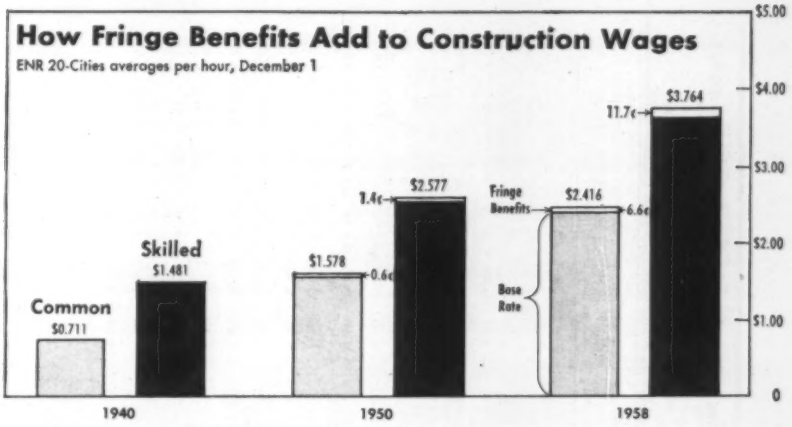
All this in labor parlance is the road to first-class citizenship for wage earners. It is a sign of the times, and is difficult to check.

• **Employer responsibility**—There are also a number of factors within the area of employer responsibility that promise either to fortify the upward trend or to leave it relatively uncontrolled.

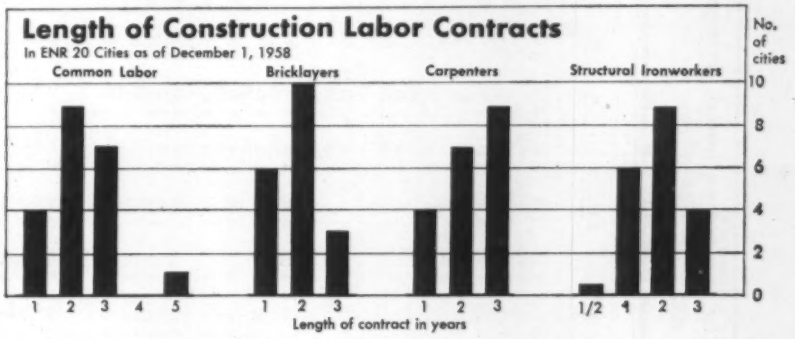
Long-term contracts, for example, have a snowballing effect. While they generally result in smaller annual pay boosts than short-term contracts produce, they inevitably set a floor for wages negotiated in the future. Average automatic increase this year was about 14 cents. The AFL-CIO says one of the three factors in setting wage demands is "how much workers elsewhere have been getting."

Current practice with respect to fringe benefits also makes the upward trend automatic. Employer contributions in many cases are still a percentage of basic rates. Every increase in the latter boosts the former.

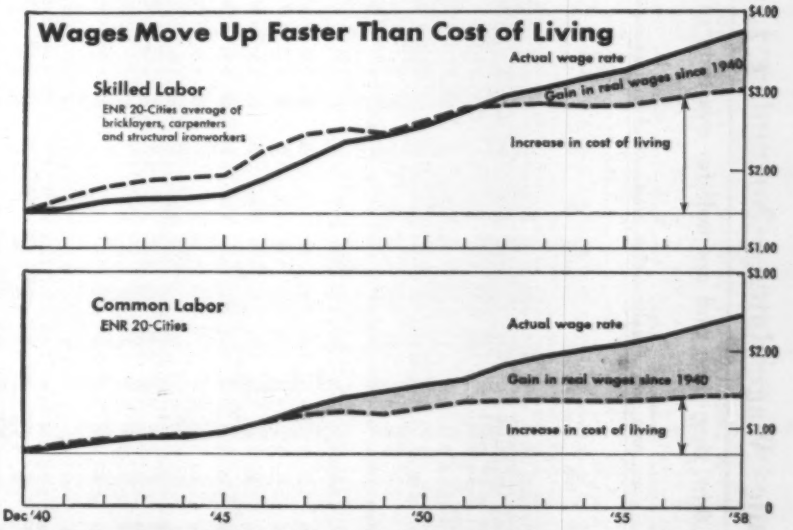
In the broad field of indirect-cost control through collective bargaining, there are only slight or isolated indications of any significant trends in uniform contract termination dates, off-season bargaining, use of escalator clauses, area-wide or group bargaining, accident prevention, jurisdictional disputes or trade association cooperation between building, heavy and highway contractors and homebuilders.



FRINGE BENEFITS HAVE ADDED more than five cents to basic wage rates for common labor and more than ten cents to skilled wages since 1950.



LONG-TERM CONTRACTS are most common for construction trades in major cities. They provide automatic future wage increases during the contract period.



CONSTRUCTION LABOR'S REAL WAGES increased every year since 1951. This gain in purchasing power is the greatest for common labor.

Building Trades Wage Rates—November 1, 1958

Quoted in $/hr., 8-hr. day; time and one-half for overtime after 40 hr. except as noted. Fringe benefits are shown under base rates

	Carpenter	Bricklayer	Ironworker Struc	Ironworker Reinf	Labor Bldg	Labor Heavy	Stone Mason	Mason's Helper	Plasterer	Mosaic & Terr	Tile Layer	Cement Finisher	Lather	Electrn Inside	Painter	Glazier	Plumber	Steamfitter	Roofer	Waterproofer	Sheet Metal Wkr	Welder	Truck Dr 1½T+	Shovel Oper	Tractor Oper 30hp+	Hoist Engr 1-Dr	Air Compr	Air Tool
NEW ENGLAND																												
Mass, Boston.....b	3.40	3.80	3.90	3.90	2.60	2.50	3.80	2.60	3.65	3.65	3.65	3.84	3.80	3.70	3.10	3.10	3.70	3.75	3.40	3.40	3.50	3.90	2.45	3.775	3.40	3.775	3.325	2.60
	.10[1]	.20[1]	.20[2]	.20[2]	.07[1]	.07[1]	.20[1]	.07[1]	.35[2]	....	....	.10[1]	.20[4]	.12[5]	.15[1]	.06[1]	.32[6]	.10[1]	.25[7]	.25[7]	.16[8]	.20[2]	....	.10[1]	.10[1]	.10[1]	.10[1]	.07[1]
MIDDLE ATLANTIC																												
Md, Baltimore.....c	3.20	3.95	3.90	3.90	2.00	2.00	3.95	2.05	3.45	3.34	3.34	3.25	3.45	3.425	2.825	3.10	3.40	3.30	3.00	3.00	3.40	*	2.00	3.80	3.40	3.10	2.85	2.10
	.075[1]	.10[1]	.075[1]	.075[1]	.075[1]	.075[1]	.10[1]	.075[1]	.075[1]	.075[1]	.075[1]	.075[1]	.075[1]	.075[1]	.075[1]	.07[1]	.075[1]	.075[1]	....	....	.08[1]	....	.075[9]	.10[1]	.10[1]	.10[1]	.10[1]	.075[1]
N J, Trenton.....d	3.725	4.00	4.425	4.425	2.75	2.85	4.00	2.85	4.00	4.00	4.00	4.00	3.50	4.35	3.35	3.425	4.00	4.00	3.75	3.75	3.95	4.05	2.61	4.55	3.58	4.30	4.05	2.75
	.10[1]	.125[1]	.23[11]	.23[11]	.10	.25[10]	.125[1]	....	.125[1]	.125[1]	.125[1]	.125[1]	....	.10[12]	....	....	.30[13]	.30[13]	.25[7]	.25[7]	.25[7]	....	....	.30[13]	.30[13]	.30[13]	.30[13]	....
N Y, New York.....e	4.10‡	4.48‡	4.30	....	3.00	3.00	4.60	3.35‡	4.35‡	4.10	3.875	4.20‡	4.20‡	3.90[f]	3.36‡	4.10‡	4.25‡	4.30‡	3.85‡	3.85‡	4.10‡	*	2.21	4.60	3.725	4.35	3.85	3.45
	.33[35]	.38[36]	.36[37]	....	.24[35]	.24[35]	.28[1]	.27[36]	.52[42]	.33[41]	.35[41,42]	.34[35]	.34[41]	.43[44]	.34[45]	.43[39,41]	.65[46]	.47[47]	.41[38,40]	.41[38,40]	.52[48]	....	.23[49]	.37[35]	.30[35]	.35[35]	.31[35]	.27[35]
Pa, Harrisburg.....f	3.105	3.625	4.10	3.90	2.125	2.125	3.625	2.25	3.25	3.625	3.625	3.225	3.25	3.375	2.60	2.52	3.45	3.45	2.90	2.60	3.75	4.10	2.175	3.985	3.31	3.715	2.25	2.25
	.035[1]	....	.23[1]	.23[1]	.035[1]	.035[1]	....	.035[1]	.035[1]	....	....	.035[1]	.035[1]	.034[1]	....	.06[1]	....	....	.035[1]	.035[1]	.10[1]	.23[1]	.035[1]	.10[1]	.10[1]	.10[1]	.035[1]	.035[1]
Pa, Philadelphia.....	3.635	4.00	4.175	4.05	2.65	2.35	3.625[4]	2.35	4.05	3.675	3.622	3.625	3.925	4.075	3.175	3.35	4.00	4.10	3.45	3.45	3.935	....	2.45	2.595[R]	2.595	2.595	2.595	2.35
	....	.17[1]	.23[14]	.23[15]	....	....	....	....	.15[1]	....	.125[1]	....	....	.06[16]	.125[1]	.17	.265[1]	.165[1]	.225[16]	.225[16]	.20[2]	....	.155[19]	.10[1]	.10[1]	.10[1]	.10[1]	....
Pa, Pittsburgh.....g	3.675	4.15	4.00	3.825	2.45	2.30	4.15	1.83	3.825	3.85	3.45	3.65	3.825	4.35	3.45	3.50	4.00	4.00	3.475	3.475	3.975	2.86	2.37	3.64	3.44	3.15	3.15	2.30
	.10[1]	.20[2]	.20[2]	.20[2]	.20[2]	.20[2]	.20[1]	.30[13]	.20[2]	.20[2]	.075[1]	.30[13]	.20[2]	.325[1]	.10[1]	.10[1]	.20[2]	.20[2]	.075[1]	.075[1]	.10[1]	.20[2]	.20[2]	.10[1]	.10[1]	.10[1]	.10[1]	.20[2]
SOUTH																												
Ala, Birmingham.....h	2.95	3.85	3.35	3.35	1.75	1.85	3.85	1.75	3.17	3.35	3.35	3.03	2.95	3.425	3.00	2.85	3.40	3.40	2.65	2.65	3.30	*	2.02	2.93	2.79	2.77	2.52	1.90
	....	....	.10[20]	.10[20]	....	....	....	....	....	....	....	....	....	.036[21]	....	....	.10[20]	.10[20]	.013[22]	.013[22]	.075[1]	....	....	....	....	....	....	....
Fla, Jacksonville.....i	3.00	3.45	3.325	3.175	1.20	1.00	3.45	1.30	3.20	3.15	3.15	2.62	3.20	3.65	2.725	2.80	3.50	3.50	2.85	2.85	3.15	*	1.25	3.15	2.65	2.95	2.10	2.10
	....	....	.075[1]	.075[1]	....	....	....	....	....	....	....	....	....	.037[160]	....	....	.10[1]	.10[1]	....	....	....	....	....	....	....	....	....	....
Ga, Atlanta.....i	3.05	3.75	3.30	3.15	1.70	1.70	3.75	1.70	3.25	3.75	3.75	3.00	3.25	3.60	3.15	2.90	3.45	3.35	2.40	2.40	3.35	3.35	1.70	3.375	2.85	3.225	2.625	1.82
	....	....	.075[1]	.075[1]	....	....	....	....	....	....	....	....	....	....	....	....	.20[23]	.20[23]	....	....	.01[24]	.01[24]	....	....	....	....	....	....
Ky, Frankfort.....j	2.90	3.50	3.55	3.55	2.10	2.15	3.50	2.50	3.00	3.50	3.50	2.90	3.25	3.60	2.45	2.60	4.15	4.15	2.70	2.70	4.225	....	2.30	3.375	2.525	3.375	2.525	2.525
	....	....	11.35[.38]	11.35[.38]	....	....	....	....	....	....	....	....	....	....	....	....	10.35[.39]	10.35[.39]	....	....	7.35[.39,.1]	....	....	....	....	....	....	....
Ky, Louisville.....[37]	3.40	3.85	3.55	3.55	2.35	2.35	3.85	2.60	3.40	3.40	3.40	3.40	3.40	3.55	3.15	2.93	3.55	3.55	2.70	2.70	3.525	*	2.88[C]	3.375	3.375	2.87	2.875	2.55
	....	....	....	....	....	....	....	....	.05[30]	....	....	....	....	.075[1]	....	....	.10[29]	.10[29]	....	....	.15[31]	....	....	....	....	....	....	....
La, New Orleans.....k	3.00	3.525	3.30	3.30	1.75	1.75	3.525	1.75	3.07	3.10	3.10	2.975	3.075	3.475	2.625	2.85	3.40	3.40	2.92	3.525	3.09	....	2.475	3.125	....	3.125	2.475	1.85
	....	.05[1]	.075[1]	.075[1]	....	....	.05[1]	....	.05[1]	....	....	....	.08[32]	.165[33]	....	....	.15[1]	.15[1]	.075[1]	.05[1]	.075[1]	....	.075[1]	.075[1]	....	.075[1]	.075[1]	....
Miss, Jackson.....	2.75	3.25	3.15	2.90	1.45	1.00	3.25	1.55	2.875	3.25	3.25	2.75	2.875	3.15	2.50	1.50	3.30	3.30	2.20	2.20	3.05	2.15	1.85	2.95	2.70	2.70	2.70	2.15
Miss, Meridian.....	2.75	3.00	3.25	3.25	1.20	1.00	3.00	1.30	2.85	3.00	3.00	2.75	1.75	3.05	2.50	2.25	3.25	3.25	2.20	2.20	3.05	....	1.00	2.95	2.70	2.70	2.15	1.25
N C, Raleigh.....	1.75	2.75	2.75	2.00	1.00	1.25	2.75	1.25	2.75	2.75	2.75	1.75	1.75	2.625	1.85	1.50	2.75	2.75	1.85	1.75	1.85	2.25	2.00	2.25	....	....	1.25	1.25
Tenn, Nashville.....l	2.95	3.75	2.90	2.90	1.55	1.55	....	1.00	3.25	3.40	3.40	2.65	3.12	3.175	3.25	2.65	3.40	3.40	2.60	2.60	3.10	....	1.80	2.875	2.30	2.425	2.025	2.30
	....	....	....	....	....	....	....	....	....	....	....	....	....	.075[1]	....	....	.10[1]	.10[1]	....	....	....	....	....	....	....	....	....	....
W Va, Charleston.....	3.425	3.85	3.50	3.50	2.35	2.35	....	....	....	3.35	3.35	3.40	3.375	3.425	2.875	2.98	3.50[D]	3.50[D]	3.25	....	3.50	....	2.60	3.35	2.80	3.00	2.25	....
	....	....	.10[1]	.10[1]	....	....	....	....	....	....	....	....	....	.115[34]	....	....	....	....	....	....	....	....	....	....	....	....	....	....
MIDDLE WEST																												
Ill, Chicago.....m	3.65	3.875	4.00	3.91	2.775	2.775	3.825	2.775	3.70	3.825	3.65	3.65	3.705	3.90	3.50	3.89	3.73	3.75	3.96	3.96	3.75	3.75	2.36	3.90	3.45	3.55	3.10	3.55
	.20[2]	.075[1]	.16[40]	.195[41]	.075[1]	.075[1]	.075[1]	.075[1]	.23[1]	....	.10[1]	.20[2]	.225[1]	.12[1]	.25[7]	.20[2]	.24[42]	.22[43]	.13[1]	.13[1]	.225[44]	.22[43]	.15[1]	.05[1]	.05[1]	.05[1]	.05[1]	.05[1]
Ind, Indianapolis.....n	3.00	3.80	3.475	3.475	2.375	2.05	3.80	....	3.60	3.65	3.55	3.275	3.50	3.65	3.30	3.41	3.60	3.60	2.925	2.925	3.48	....	2.50	....	....	3.53	....	....
	.075[1]	....	.075[1]	.075[1]	.075[1]	.075[1]	....	....	....	....	....	....	....	.077[35]	.15[3]	.25[4]	....	....	....	....	....	....	....	....	....	.075[1]	....	....
Mich, Detroit.....o	3.40	3.77	3.75	3.52	2.65	2.80	3.77	2.73	2.66	3.70	3.00	3.17	3.55	3.80	3.25	3.17	3.735	3.735	3.49	3.17	3.57	3.75	2.80	3.50	3.50	3.47	3.195	2.78
	40[46]	29[47]	225[49]	.10[1]	33[46]	.10[1]	29[47]	33[46]	34[49]	.10[1]	16[41]	35[46]	43[42]	36[48]	30[44]	....	165[46]	14[46]	225[47]	35[46]	40[48]	225[49]	.10[1]	.10[1]	.10[1]	25[79]	.10[1]	25[71]
Ohio, Cincinnati.....p	3.575	3.85	3.60	3.45	2.625	2.525	3.85	....	3.625	3.55	3.55	3.425[R]	3.575	3.82	3.05	3.50	3.725	3.80	3.45	3.45	3.68	....	2.45	3.60	2.97	3.375	3.60	3.60
	....	....	.10[1]	.10[1]	....	....	....	....	....	....	....	....	.06[1]	.04[72]	....	....	.16[5]	.09[57]	....	....	....	....	.02[3]	....	....	....	....	....
Ohio, Cleveland.....q	3.83	3.805	3.73	3.73	3.09	3.005	3.835	3.09	3.83	3.655	3.655	3.83	3.83	3.95	3.505	3.58	3.78	3.64	3.83	3.715	3.755	3.73	2.75	3.83	3.58	3.705[F]	3.455	3.455
	....	.10[1]	.10[1]	.10[1]	....	....	....	....	....	....	....	....	....	....	.15[3]	.25[4]	.10[1]	.19[5]	....	.12[1]	.07[56]	.10[1]	.10[1]	....	....	....	....	....
Ohio, Columbus.....r	3.40	3.90	3.60	3.60	2.70	2.50	3.55	2.70	3.50	3.325	3.325	3.25	3.50	3.60	3.10	2.90	3.55	3.55	3.425	3.60	3.50	3.60	2.425	3.60	3.375	3.60	3.225	2.975
	.01[24]	.01[24]	.08[26]	.08[26]	....	....	....	....	.04[77]	....	....	....	.04[77]	....	....	....	.05[1]	.05[1]	.07[1]	.07[1]	.10[45]	.08[26]	....	....	....	....	....	....
Ohio, Dayton.....	3.45	3.84	3.65	3.575	2.52	2.52	3.84	2.79	3.55	....	....	3.22	3.55	3.85	3.25	3.13	3.65	3.65	3.21	3.21	3.425	....	2.67	3.10[G]	3.10[G]	3.10[G]	3.10[G]	3.10[G]
	....	....	.10[1]	....	....	....	....	....	....	....	....	....	....	....	....	....	.10[1]	.10[1]	.12[1]	.12[1]	.07[1]	....	....	....	....	....	....	....	....
Ohio, Toledo.....s	3.72	3.83	3.72	3.69	2.84	2.78	3.83	2.97	3.72	3.65	3.83	3.72	3.72	3.80	3.39	3.20	3.75	3.75	3.56	3.56	3.56	*	2.625	3.72	3.44	3.58	3.305	2.995
	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.112[50]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	.07[1]	....	....	....	....	....	....	....
Wis, Milwaukee.....	3.40	3.65	3.47	3.47	2.62	2.62	3.65	2.73	3.41	3.56	3.38	3.31	3.41	3.42	3.15	3.20	3.51	3.51	3.20	3.20	3.35	3.47	2.50	3.565	3.40	3.235	2.96	2.84
	.14[78]	.14[78]	.07[1]	.07[1]	.14[78]	.14[78]	.14[78]	.14[78]	.14[78]	.152[79]	.156[80]	.07[1]	.14[78]	.27[81]	.14[78]	.092[82]	.14[78]	.14[78]	.15[102]	.15[102]	.14[83]	.07[1]	....[84]	.07[1]	.07[1]	.07[1]	.07[1]	.14[78]
WEST OF MISSISSIPPI																												
Colo, Denver.....t	3.34	3.75	3.175	3.26	2.17	2.17	3.75	2.50	3.475	3.55	3.55	3.34	3.475	3.60	3.075	2.95	3.65	3.65	3.20	3.075	3.65	*	2.30	3.05	2.90	2.90	2.90	2.45
	....	....	.075[1]	.075[1]	....	....	....	....	.125[85]	....	....	....	.075[1]	.14[86]	....	....	.10[1]	.10[1]	.10[1]	....	....	....	....	....	....	....	....	....
Iowa, Des Moines.....u	3.25	3.925	3.30	3.30	2.50	2.50	3.925	2.50	3.375	3.25	3.25	3.30	3.30	3.575	3.25	2.85	3.55	3.55	2.77	....	3.25	*	2.65	3.375	3.375	3.15	2.60	2.70
	....	....	.075[1]	.075[1]	....	....	....	....	....	....	....	....	....	.15[21]	....	....	.215[87]	.215[87]	....	....	.15[21]	....	....	....	....	....	....	....
Kans, Topeka.....v	3.00	3.73	3.40	3.25	2.10	....	3.73	2.325	3.375	3.75	3.125	3.10	3.125	3.35	2.85	2.85	3.50	3.50	2.775	2.775	....	*	2.375	3.45	....	3.05	....	....
Minn, Duluth.....w	2.96	3.51	3.41	3.16	2.31	2.31	3.51	2.41	3.35	3.30	2.92	2.96	3.25	3.33	2.95	2.71	3.33	3.33	2.95	....	3.125	*	2.43	3.43	3.21	3.21	2.88	2.41
	.075[1]	....	....	....	.075[1]	.075[1]	....	.075[1]	.075[1]	....	.195[88]	.075[1]	.075[1]	.20[89]	.075[1]	.21[89]	.14[91]	.14[91]	.075[1]	....	.175[92]	....	.075[1]	....	....	....	....	.075[1]
Minn, Minneapolis.....x	3.30	3.725	3.47	3.37	2.55	2.55	3.725	2.65	3.40	3.30	3.12	3.40	3.40	3.38	3.15	3.00	3.42	3.42	3.30	3.30	3.275	*	2.55	3.37	2.93	3.30	2.82[H]	2.70
	....	....	....	....	....	....	....	....	23[93]	0[92]	227[92]	....	23[93]	37[95]	....	033[96]	20[94]	20[94]	....	....	225[44]	....	....	....	....	....	....	....
Minn, St. Paul.....x	3.30	3.725	3.47	3.37	2.55	2.55	3.725	2.65	3.40	3.30	3.12	3.40	3.25	3.38	3.15	3.00	3.42	3.42	3.30	3.30	3.15	*	2.55	3.37	2.93	3.30	2.82[H]	2.70
	....	....	....	....	....	....	....	....	23[93]	.08	227[92]	....	33[96]	37[95]	....	033[96]	20[94]	20[94]	....	....	40[122]	....	....	....	....	....	....	....

Building Trades Wage Rates—*continued*

	Carpenter	Bricklayer	Ironworker Struc	Ironworker Reinf	Labor Bldg	Labor Heavy	Stone Mason	Mason's Helper	Plasterer	Mosaic & Terr	Tile Layer	Cement Finisher	Lather	Electrn Inside	Painter	Glazier	Plumber	Steamfitter	Roofer	Waterproofer	Sheet Metal Wkr	Welder	Truck Dr 1½T+	Shovel Oper	Tractor Oper 30hp+	Hoist Engr 1-Dr	Air Compr	Air Tool
Mo, Kansas City	y 3.325	3.85	3.40	3.345	2.355	2.405	3.55	2.55	3.625	3.575 .125[1]	3.575 .125[1]	3.325	3.375	3.60 27.60[99]	3.25	3.42	3.60 09.00[100]	3.40 09.00[100]	3.03	3.03	3.55 .085[78]	•	2.33	3.345	3.10	3.10	3.10	2.45
Mo, St. Louis	3.575 .10[1]	3.90 .315[101]	3.60 .075[1]	3.60 .075[1]	2.625 .10[1]	2.625 .10[1]	3.90 .315[103]	3.00 .10[1]	3.80 .075[1]	3.77 .10[102]	3.525 .251[102]	3.875 .10[104]	3.80 .075[1]	3.955 29.85[105]	3.555 .253[105]	3.95 .10[1]	3.85 .325[106]	3.925 .275[107]	3.50 .15[108]	3.875 .10[104]	3.71 .333[109]	3.125	2.725 .075[110]	3.675	3.675	3.125	3.125	3.125
Mont, Billings	z 2.95	3.50	3.455	3.455	2.33	2.33	3.50	2.33	3.275	3.50	3.50	2.33	3.00	3.25 .033[111]	2.60	2.74	3.30	3.30	2.80	2.80	3.075 .10[1]	3.30	2.38	2.975	2.975	2.755	2.525	2.58
Nebr, Omaha	aa 3.25	3.70	3.35	3.35	2.275	2.15	3.70	2.35	3.50	3.15	3.15	3.175	3.50	3.65	2.85	2.90	3.50 .075[112]	3.50 .115[113]	2.575	2.575	3.10 .075[85]	•	2.15	3.25	2.90	2.90	2.70	2.70
N D, Bismarck	2.40	3.25	3.32	3.32	1.63	1.63	3.25	1.88	2.75	....	3.00	2.40	2.75	2.70	2.30	2.30	2.75	2.75	2.40	2.40	2.25	•	1.75	2.60	2.30	2.47	1.75	1.75
Okla, Oklahoma City	bb 3.00	3.80	3.05	3.05	2.05	1.90	3.80	2.15	3.50	3.00	3.00	3.10	3.50	3.40	2.80	2.75	3.50	3.50	2.75	2.75	3.15	2.75	2.25	2.90	2.90	2.90	2.75	2.30
Okla, Tulsa	bb 3.05	3.80	3.375	3.375	2.10	2.00	3.80	2.25	3.25	3.30	3.30	3.25	3.25	3.50	3.00	3.00	3.60	3.60	2.75	2.75	3.42	2.75	2.25	3.00	2.80	3.00	3.00	2.75
S D, Pierre	2.75	3.00	2.92	2.92	1.48	1.48	2.00	1.60	4.00	2.35	2.35	2.35	4.00	2.85	2.10	2.10	2.90	2.92	2.50	2.50	3.10	3.05	1.85	2.30	1.85	3.00	1.65	1.65
Tex, Austin	cc 2.925	3.75	3.25 .075[1]	2.95	1.35	1.35	3.75	1.75	3.50	3.50	3.50	2.975	3.50	3.375	2.625	2.625	3.20	3.313	2.40	....	3.313	•	1.25[J]	3.25	3.25	3.25	2.90	1.45
Tex, Dallas	dd 3.175	3.875	3.30 .075[1]	3.05 .075[1]	1.70	1.70	3.875	1.85	3.563 .10[1]	3.125 .075[1]	3.125 .075[1]	3.175	3.563 .10[1]	3.375 .075[1]	3.00	2.915	3.375 .085[76]	3.375 .085[76]	2.60	2.60	3.375 .075[1]	•	1.70	3.325	1.70	3.05	1.85	1.85
Tex, Houston	ee 3.26	3.875	3.125 .075[1]	2.875 .075[1]	1.85	....	3.875	2.025	3.50 .10[1]	3.55	3.55	3.10	3.50 .10[1]	3.65 15.11[111]	3.10 .075[1]	2.925	3.425 .185[116]	2.675 .025[116]	2.875	2.875	3.375 .075[1]	....	2.125	3.30	3.30	2.80	2.80	2.025
Tex, San Antonio	mm 3.00	3.50	3.375	....	1.45	1.45	3.50	1.565	3.50	2.875	2.875	3.00	3.50	3.375	2.75	2.75	3.425	3.425	2.00	2.00	3.378	2.50	2.10	3.25	3.25	2.85	2.85	2.85
FAR WEST																												
Ariz, Phoenix	ff 3.36	4.00	3.65 .10[1]	....	2.36	2.36	3.75	2.58	3.71 .10[116]	4.00	3.75	3.345	3.71 .10[116]	3.80 11.18[118]	2.95 .10[119]	2.84	3.75 .20[117]	3.75 .20[117]	3.00	....	3.70 .09[1]	3.61	2.48	3.43	3.235	3.065	2.615	2.615
Calif, Los Angeles	gg 3.375 .10[1]	3.85 .10[120]	3.85 .205[122]	3.60 .205[122]	2.68 .10[1]	2.68 .10[1]	3.85 .10[120]	2.93 .10[1]	4.00 .30[121]	3.63	3.60 .163[122]	3.40 .10[1]	4.00 .30[121]	4.15 .04[273]	3.36 .095[1]	3.285 .075[1]	3.80 .385[123]	3.80 .385[123]	3.35 .20[124]	3.35 .20[124]	3.70 .31[125]	•	2.83 .10[1]	3.81 .10[1]	3.71 .10[1]	3.41 .10[1]	2.93 .10[1]	2.89 .10[1]
Calif, San Diego	gg 3.375 .10[1]	4.00 .10[126]	3.85 .20[2]	3.60 .20[2]	2.66 .075[1]	2.66 .075[1]	4.00 .10[126]	3.00 .075[1]	3.875 .13[126]	3.67	3.67	3.375 .10[1]	3.875 .13[126]	4.05 .142[139]	3.29 .10[1]	3.285 .075[1]	3.80 .296[127]	3.80 .296[127]	3.20 .10[1]	3.20 .10[1]	3.65 .09[1]	•	2.83 .10[1]	3.81 .10[1]	3.71 .10[1]	3.41 .10[1]	2.93 .10[1]	2.87 .075[1]
Calif, San Francisco	hh 3.30 .325[121]	3.95 .525[120]	3.85 .205[122]	3.60 .205[122]	2.685 .10[1]	2.685 .10[1]	3.95 .525[120]	....	3.74 .525[122]	2.70 .075[1]	3.275 .165[124]	2.94 .075[1]	3.43 .225[125]	3.91 .345[127]	3.35 .215[128]	3.09 .16[129]	3.82 .46[140]	3.82 .46[140]	3.35 .25[70]	3.35 .25[70]	3.45 .24[141]	2.61 .135[143]	2.81 .10[1]	3.85 .10[1]	3.70 .10[1]	3.41 .10[1]	3.10 .10[1]	2.955 .10[1]
Idaho, Boise	ii 3.00	3.60	3.275 .075[1]	3.275	2.32	2.32	3.60	2.77	3.00	3.60	3.60	3.10	3.00	3.35	2.85	2.995	3.35	3.35	2.75	2.75	3.10 .075[1]	2.96 .075[1]	2.75 .075[1]	3.11 .075[1]	2.96 .075[1]	2.66 .075[1]	2.66 .075[1]	2.42 .075[1]
Utah, Ogden	3.075	3.77	3.325	3.325	2.20	2.20	3.77	2.70	3.50	3.125	2.75	3.05	3.50	3.275	2.95	2.56	3.45 .105[38]	3.45 .105[38]	3.00	3.00	3.10	2.95	2.60[J]	3.25[K] .10[1]	2.05 .10[1]	2.775 .10[1]	2.65 .10[1]	2.325 .10[1]
Utah, Salt Lake City	3.075	3.77	3.325 .075[1]	3.325 .075[1]	....	2.275	3.77	2.70	2.90	3.125	2.75	3.05	3.50	3.275	2.86	2.74	3.45	3.45	3.315	3.00	3.10 .16[148] .075[1]	3.05	2.35[L]	3.10[M]	2.95	2.775	2.65	2.60
Wash, Seattle	jj 3.13 .10[1]	3.90 .10[1]	3.40 .10[1]	3.20 .10[1]	2.70 .10[1]	2.70 .10[1]	3.90 .10[1]	2.81 .10[1]	3.40 .10[1]	3.50 .10[1]	3.50 .10[1]	3.23	3.40 .29[144]	3.65 .26[145]	3.135 .10[1]	3.15 .184[146]	3.70 .23[147]	3.70 .23[147]	3.04	3.04	3.525 .20[91]	3.90 .075[1]	2.87 .175[148]	3.63 .20[2]	3.26 .20[2]	3.29 .20[2]	2.99 .20[2]	2.90 .10[1]
Wash, Tacoma	kk 3.13 .10[1]	3.90 .10[1]	3.40 .10[1]	3.20 .10[1]	2.70 .10[1]	2.70 .10[1]	3.90 .10[1]	3.00 .10[1]	3.60 .10[1]	3.50 .10[1]	3.02 .10[1]	3.20 .10[1]	3.50	3.40 .25[70]	3.135	2.90	3.70 .24[149]	3.70 .24[149]	3.23	3.23	3.525 .10[1]	•	3.07 .20[2]	3.63 .20[2]	3.26 .20[2]	3.29 .20[2]	2.99 .20[2]	2.90 .10[1]

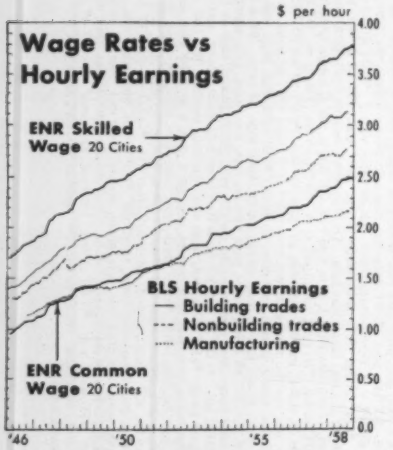
•* Same as craft doing work •† 7 hr day •‡ 6 hr day **RANGES:** •A 3.625/4.00 •B 2.595/4.23 •C 2.86/2.88 •D 3.50/3.65 •E 3.225/3.425 •F 3.705/3.83 •G 3.10/3.73 •H 2.70/2.92 •I .85/1.25 •J 2.325/2.60 •K 3.10/3.25 •L 2.35/2.50 •M 3.10/3.25

BENEFITS: •1 H&WF •2 10¢ H&W, 10¢ PF •3 15¢ H&W, 5¢ Advtg., 10¢ Unemp. Ins. •4 15¢ H&W, 5¢ Advtg. •5 10¢ H&W, 2¢ AF •6 15¢ H&W, 15¢ PF, 2¢ IF •7 15¢ H&W, 10¢ PF •8 10¢ H&W, 5¢ PF •9 5¢ H&W, 2½¢ PF •10 11¢ H&W, 14¢ PF •11 15¢ H&W, 7½¢ PF •12 10¢ H&W, 1% PF •13 10¢ H&W, 20¢ PF •14 15½¢ H&W, 7½¢ PF •15 HW&P •16 10¢ H&W, 1% PF, ½% AF •17 $12 per mo. Trust F •18 12½¢ H&W, 10¢ PF •19 7½¢ H&W, 8¢ PF •20 7½¢ H&W, 2½¢ AF •21 1% PF, ½% AF •22 ½% AF •23 7½¢ H&W, 7½¢ PF, 5¢ EF •24 1¢ AF •25 7 PH •26 8 PH •27 6 PH •28 10¢ H&W, 1¢ AF •29 7½¢ H&W, 2½¢ EF •30 5¢ Advtg. •31 7½¢ H&W, 7½¢ VF •32 5¢ H&W, 3¢ Promotion •33 7½¢ H&W, 7½% VF, 1½¢ AF •34 7½¢ H&W, 1% PF, 1/10% AF •35 4% H&W, 4% PF •36 4% H&W, 20¢ PF •37 3% H&W, 3% PF, 10¢ VF •38 8% H&W, 3% PF •39 10¢ VF •40 10¢ SF •41 3% H&W, 5% PF •42 3% VF •43 20¢ BF, 2¢ Prom, 15¢ H&W, 15¢ PF •44 1% JIB, 5% HW&P, 4% VF, 1% NC •45 10% FB/8% HW&P •46 13% + 10¢ FB •47 3% H&W, 4% PF, 3% VF, 1% EF •48 3% + 10¢ H&W, 3% PF, 2% + 10¢ VF •49 12¢ H&W, 11½¢ PF •50 15¢ H&W, 1¢ AF •51 10¢ H&W, 7½¢ PF, 2¢ AF •52 9¢ H&W, 15¢ PF •53 7¢ H&W, 15¢ PF •54 7½¢ H&W, 15¢ PF •55 2% H&W, 1/10% AF •56 10¢ H&W, 3% PF, 15¢ VF •57 10¢ H&W, 3% PF, 2% PH •58 10¢ H&W, 3% PF, 6% PH •59 10¢ H&W, 7½¢ PF, 5¢ VF •60 10¢ H&W, 10% PF, 4% VF •61 10¢ H&W, 2% VF •62 10¢ H&W, 10¢ PF, 23¢ VF •63 10¢ H&W, 7% VF •64 10¢ H&W, 7½¢ PF, 12½ VF •65 7½¢ H&W, 7½¢ PF, 1½¢ EF •66 5¢ PF, 7½¢ VF, 1½¢ EF •67 12½¢ H&W, 10¢ VF •68 10¢ H&W, 3% PF, 16¢ VF, 3¢ EF •69 10¢ H&W, 7½¢ PF, 5¢ VF •70 10¢ H&W, 15¢ VF •71 10¢ H&W, 10¢ PF, 5¢ VF •72 PF •73 7½¢ H&W, 2¢ EF •74 12½¢ Ins, 12½¢ PF •75 10¢ H&W, 9¢ PF •76 7½¢ H&W, 1¢ AF •77 3¢ H&W, 1¢ AF •78 7¢ H&W, 7¢ VF •79 7¢ H&W, 8¢ VF •80 9¢ H&W, 7¢ VF •81 11¢ H&W, 16¢ VF •82 3¢ H&W, 6¢ VF •83 7¢ H&W, 7¢ VF, 10¢ PF •84 $2.25/wk, H&W, 5¢-10¢ VF •85 7½¢ H&W, 5¢ Ind Prom •86 VF •87 7½¢ H&W, 1½¢ EF, 7½¢ VF •88 7½¢ H&W, 6¢ VF, 8¢ PH •89 2.75% H&W, 1% PF, 4% VF, 1% AF •90 7½¢ H&W, 5% VF •91 7½¢ H&W, 2% VF •92 7½¢ H&W, 10¢ VF •93 10¢ H&W, 10¢ VF, 3¢ Prom •94 10¢ H&W, 10¢ VF •95 3% H&W, 7% VF, 1% PF •96 3½¢ H&W, 1 wk V •97 9¢ H&W, 6PH, 1 wk V •98 10¢ H&W, 20¢ V, 3¢ Prom •99 10% H&W, 1% PF, 10¢ VF, 4¢ AF •100 7½¢ H&W, 1½¢ EF •101 12¢ H&W, 5% VF •102 10¢ VF Incl. in base pay •103 7½¢ H&W, 5% VF •104 10¢ H&W, 7½¢ per mi travel pay •105 10¢ H&W, 5% V •106 10¢ H&W, 5¢ PF, 10¢ VF, 2½¢ EF, 5¢ Ind Prom •107 20¢ H&W, 7½¢ VF •108 10¢ H&W, 5¢ Travel pay •109 7½¢ H&W, 10¢ PF, 4% VF •110 $2.25/wk VF •111 1% NC •112 7½¢ H&W, 10¢ travel pay •113 7½¢ WF, 4¢ AF •114 2¢ AF •115 7½¢ H&W, 10¢ VF, 1¢ AF •116 Jt. Ind Prom •117 7½¢ H&W, 12½¢ AF •118 2% N.C., 1% to local Bd •119 8¢ H&W, ½¢ administ, 1½¢ Jt Comm •120 8¢ H&W, 2¢ Prom •121 10¢ H&W, 10¢ PF, 5¢ Trust F, 5¢ Prom •122 2½% H&W, 7½¢ VF •123 10¢ H&W, 3½% VF •124 10¢ H&W, 10¢ SF •125 10¢ H&W, 10¢ PF, 10¢ VF •126 Ind Prom •127 10¢ H&W, 7½% VF, 1¢ AF •128 10¢ H&W, 3¢ Prom •129 10¢ H&W, 1% NC •130 17½¢ H&W, 20¢ PF, 10¢ PH, 5¢ Jt Bd •131 10¢ H&W, 10¢ PF, 10¢ VF, 2½¢ BF •132 10¢ H&W, 10¢ PF, ½¢ AF •133 12¢ H&W, 17½¢ PF, 20¢ VF, 3¢ Prom •134 7½¢ H&W, 9¢ VF •135 10¢ H&W, 12½¢ VF •136 12¢ H&W, 20¢ VF, 17½¢ PF, 3¢ Prom •137 10¢ H&W, 15½¢ VF, 4¢ PF, 5¢ Ind F •138 14½¢ H&W, 7¢ VF •139 7½¢ H&W, 8½¢ VF •140 12½¢ H&W, 15¢ VF, 12½¢ PF, 2½¢ Jt Ind, 1¢ AF, 2½¢ Conval. •141 10¢ H&W, 10¢ PF, 14¢ VF •142 7½¢ H&W, 8¢ PF •143 10¢ H&W, 6¢ VF •144 12¢ H&W, 17¢ VF •145 7½¢ H&W, 15¢ VF, 3½¢ PF •146 12¢ VF, 6¢ PH •147 9¢ H&W, 14¢ VF •148 7½¢ H&W, 10¢ PF •149 10¢ H&W, 14¢ VF •150 1% PF •151 10¢ H&W, 10¢ PF, 20¢ VF •152 8¢ H&W, 7¢ VF •153 2½¢ EF

OVERTIME (DT=Double Time; TH=Time & ½): •a DT •b DT all but (DT Sun & Hol) labor, elec, glaz, tr dr, hoist engr •c DT all but (TH) labor, mas help, tr dr, air tool •d DT all but (TH) labor heavy const •e DT all but (TH) elec, (DT Sun & Hol) mas help •f DT all but (TH) elec, roof, waterproof •g DT all but (TH) labor heavy const, mas help, cem fin, weld, tr dr, shovel, tractor, hoist engr, air comp, air tool, (TH SS & Hol) elec, paint, (DT Hol) stone mas, steamf, roof, waterproof •h DT brick, iron, stone mas, tile, lath, plumb, steamf, sheet met, (DT Sun) carp •i DT stone mas, mas help, plast, mos&ter, tile, lath, plumb, steamf, weld •j DT carp, iron, cem fin, lath, plumb, steamf, tr dr, shovel, tractor, hoist engr, air comp, air tool •k DT all but (DT SS & Hol) labor, mas help, mos&ter, cem fin, air tool •l DT all but (TH) labor, mason's help, paint, glaz, (DT SS & Hol) brick, mos&ter, elec, plumb, sheet met •m DT all but (TH 1st 2½ hrs) labor, mas help, (TH 4:30–7PM) cem fin, (DT SS & Hol) plumb, roof, waterproof, tractor, air comp, (TH) elec, paint, (TH before 8AM & after 4:30 PM, DT Sun & Hol & before 6AM Mon) glaz, (DT Sun & Hol) sheet met, (DT Hol) tr dr •n DT all but (TH) roof, waterproof, tr dr •o DT all but (TH) tr dr, (DT SS & Hol) cem wkr, elec, labor •p DT all but (TH) labor, tr dr, shovel, tractor, hoist engr, air comp, air tool •q DT all but (DT SS & Hol) labor, tr dr •r DT all but (TH) mas help, mos&ter, tile, cem fin, paint, glaz, roof, waterproof, tr dr, hoist engr, air comp, air tool, (DT Sun & Hol) labor •s DT all but (DT SS & Hol) elec, shovel, tractor, hoist engr, air comp •t DT carp, iron, plast, mos&ter, tile, lath, sheet met, (DT SS & Hol) labor, mas help, elec, plumb, steamf, roof, shovel, tractor, hoist engr, air comp, (SS & Hol & after 1st 4 hrs) cem fin •u DT SS & Hol •v DT all but (DT SS & Hol) labor, carp, cem fin, lath, elec, paint, glaz, plumb, steamf, roof, waterproof •w DT all but (DT Sun & Hol) labor heavy const, carp, mas help, cem fin, glaz, plumb, steamf, roof, air tool, (TH) paint •x TH all but (DT) brick, iron, stone mas, plast, lath •y DT all but (DT SS & Hol) labor bldg, paint, plumb, steamf, roof, waterproof, tr dr, air tool, (TH) labor heavy const, air comp •z DT brick, iron, stone mas, mas help, mos&ter, tile, elec, plumb, steamf, sheet met, weld •aa DT all but (TH) labor heavy const, mas help, cem fin, elec, paint, glaz, tr dr, hoist engr, air tool •bb DT brick, iron, stone mas, plast, mos&ter, tile, cem fin, lath, weld •cc DT brick, iron, stone mas, plast, mos&ter, tile, lath, shovel, tractor, hoist engr, (DT SS & Hol) carp, elec, plumb, steamf, other TH •dd DT brick, iron, stone mas, plast, mos&ter, tile, lath, shovel, hoist engr, (DT SS & Hol) carp, cem fin, elec, plumb, steamf, sheet met, other TH •ee DT all but (DT SS & Hol) labor bldg, mas help, mos&ter, tile, cem fin, elec, glaz, plumb, roof, waterproof, sheet met •ff DT brick, iron, stone mas, mas help, lath, plumb, steamf, weld •gg DT brick, carp, iron, stone mas, plast, lath, elec, plumb, steamf, sheet met •hh DT all but (TH) tr dr, shovel, tractor, hoist engr, air comp, air tool, (TH 1st 4 hrs) labor, (TH 1st 2 hrs) mos&ter, paint, glaz, roof, waterproof, weld •ii DT SS & Hol all but (DT) plumb, steamf, (TH) weld, tr dr •jj DT all but (TH) roof, waterproof •kk DT all but (TH) labor heavy const, tr dr, shovel, tractor, hoist engr, air comp, air tool •ll DT all but (TH) mos&ter, tile, elec, paint, glaz, tr dr •mm DT all but (TH) paint, glaz, plumb, steamf, roof, waterproof, tr dr

Fourth Quarterly Round up:

Gains in Construction



Construction wages and average hourly earnings increase in '58 much faster than in manufacturing industries.

HOW CONSTRUCTION WAGES increased in New York as reported by ENR

Dollars per hour

Year	Carpenters	Bricklayers	Bricklayers' Helpers	Common Laborers	Structural Ironwkrs
	10-hr day	8-hr day	8-hr day	10-hr day	8-hr day
1874	$0.23	$0.43	$0.18	$0.14	.....
	8-hr day			9-hr day	
1890	0.43	0.47	0.28	0.14	.....
				8-hr day	
1907	0.63	0.70	0.38	0.22	$0.60
1913	0.63	0.70	0.38	0.23	0.63
1930	1.65	1.93	1.24	1.03	1.93
1932	1.33	1.47	1.00	0.65	1.68
	7-hr day	7-hr day	7-hr day		
1938	1.75	1.89	1.14	0.91	1.93
1939	1.75	1.89	1.14	0.91	1.93
1942	1.85	2.00	1.211	0.95	2.00
1946	2.10	2.25	1.44	1.204	2.25
1947	2.467	2.646	1.66	1.438	2.563
1948	2.73	2.94	1.91	1.63	2.98
1949	2.75	3.20	1.95	1.70	3.00
1950	2.88	3.30	2.173	1.802	3.14
1951	3.09	3.548	2.279	1.957	3.348
1952	3.152	3.674	2.372	2.021	3.411
1953	3.335	3.858	2.539	2.184	3.591
1954	3.57	4.033	2.754	2.415	3.975
1955	3.637	4.15	2.817	2.489	4.017
1956	3.888	4.28	3.087	2.755	4.235
1957	4.131	4.62	3.321	2.928	4.512
1958	4.374*b*	4.741*d*	3.564*e*	3.186*b*	4.658*c*
1959	4.644*b*	5.127*d*	3.834*e*	3.456*b*	4.866*f*

FRINGE BENEFITS: *a* Rates from 1950 include fringe benefits such as welfare, pension, vacation and general benefit fund. *b* 4%WF-4%PF. *c* 3%WF-3%PF. *d* 4%WF-20¢PF; base rate incl. 10¢VF. *e* 5%WF-3%PF. *f* 3%WF-3%PF-3%BF

CONTRACT STATUS: Bricklayers' contract expire May 31, 1960; all other contracts expire June 30, 1960.

COST OF LIVING rises to a record, then tapers off as measured by the Bu of Labor Statistics Consumer Price Index, 1947-49 = 100

	1939	1945	1949	1950	1955	1956	1957	1958
Jan	59.6	76.1	102.7	106.6	114.3	114.6	118.2	122.3
Feb	59.4	76.0	101.6	100.4	114.3	114.6	118.7	122.5
Mar	59.3	76.0	101.9	100.7	114.3	114.7	118.9	123.3
Apr	59.2	76.1	102.1	100.8	114.2	114.9	119.3	123.5
May	59.1	76.7	101.8	101.3	114.2	115.4	119.6	123.6
Jun	59.0	77.3	102.0	101.8	114.4	116.2	120.2	123.7
Jul	59.2	77.5	101.4	102.9	114.7	117.0	120.8	123.9
Aug	59.0	77.5	101.6	103.7	114.5	116.8	121.0	123.7
Sept	60.2	77.2	102.1	104.4	114.9	117.1	121.1	123.7
Oct	60.0	77.2	101.5	105.0	114.9	117.7	121.1	123.7
Nov	59.9	77.5	101.6	105.5	115.0	117.8	121.6	.....
Dec	59.6	77.8	101.0	106.9	114.7	118.0	121.6	.....

Pre-depr. high 77.0, Nov 1925—Depr. low 53.6, Apr 1933

CONSTRUCTION WAGES climb slower in '58 than '57 for key skilled trades and for common labor, as measured by the ENR 20-Cities averages

SKILLED LABOR, dollars per hour
(Bricklayer, carpenter, ironworker average)

	1926	1932	1939	1946	1949	1950	1955	1956	1957	1958
J	1.24	1.15	1.43	1.70	2.35	2.46	3.19	3.30	3.46	3.63
F	1.24	1.11	1.43	1.73	2.35	2.47	3.19	3.31	3.46	3.62
M	1.24	1.11	1.44	1.74	2.38	2.47	3.19	3.31	3.46	3.63
A	1.25	.95	1.44	1.76	2.38	2.48	3.19	3.32	3.47	3.64
M	1.26	.96	1.44	1.77	2.38	2.49	3.21	3.34	3.49	3.65
J	1.27	.99	1.44	1.80	2.39	2.52	3.23	3.37	3.51	3.68
J	1.27	1.00	1.44	1.82	2.41	2.52	3.25	3.39	3.54	3.72
A	1.28	.98	1.44	1.83	2.44	2.54	3.26	3.41	3.58	3.73
S	1.28	.99	1.44	1.85	2.45	2.55	3.27	3.42	3.59	3.74
O	1.29	.98	1.44	1.85	2.46	2.57	3.29	3.42	3.60	3.75
N	1.29	.97	1.46	1.86	2.46	2.57	3.29	3.43	3.61	3.76
D	1.29	.98	1.46	1.87	2.46	2.58	3.29	3.43	3.61	3.76
Av	1.27	1.02	1.44	1.80	2.41	2.52	3.24	3.37	3.53	3.69

COMMON LABOR, dollars per hour
(Building and heavy construction average)

	1926	1932	1939	1946	1949	1950	1955	1956	1957	1958
J	.54	.45	.68	.95	1.42	1.49	2.02	2.11	2.21	2.37
F	.54	.45	.68	.97	1.42	1.49	2.02	2.12	2.22	2.38
M	.54	.44	.68	.99	1.42	1.49	2.02	2.12	2.22	2.38
A	.54	.41	.68	1.00	1.43	1.49	2.03	2.12	2.23	2.39
M	.55	.41	.68	1.02	1.43	1.51	2.05	2.15	2.26	2.41
J	.55	.41	.68	1.03	1.44	1.53	2.06	2.17	2.29	2.44
J	.55	.41	.68	1.06	1.47	1.54	2.07	2.19	2.30	2.46
A	.56	.42	.69	1.07	1.47	1.56	2.09	2.19	2.33	2.47
S	.56	.43	.69	1.07	1.48	1.56	2.09	2.19	2.33	2.47
O	.55	.43	.69	1.07	1.48	1.57	2.09	2.19	2.33	2.48
N	.56	.43	.69	1.08	1.48	1.58	2.09	2.19	2.34	2.48
D	.56	.43	.69	1.09	1.48	1.58	2.10	2.19	2.34	2.48
Av	.55	.43	.68	1.03	1.45	1.53	2.06	2.16	2.28	2.44

Averages include fringe benefits—see wage table by trades for each of 20 cities on page 42 for nature and extent of these—welfare fund, pension fund and others.

AVERAGE HOURLY EARNINGS of contract construction workers rise faster than for manufacturing labor as measured by Bu of Labor Statistics figures

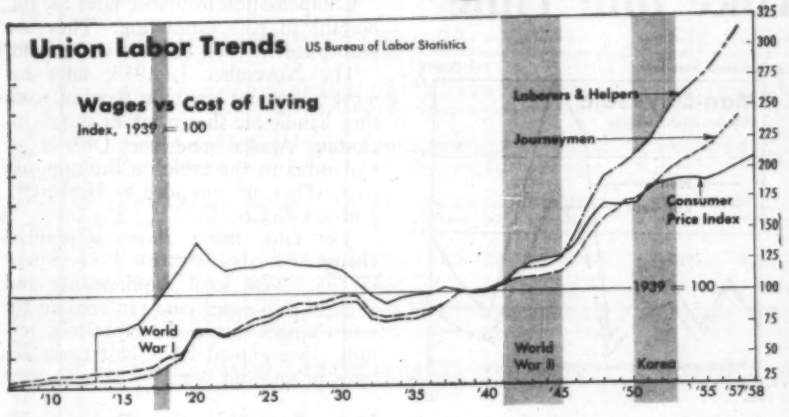
	Building*							Non building*							Manufacturing						
	1946	1949	1950	1955	1956	1957	1958	1946	1949	1950	1955	1956	1957	1958	1946	1949	1950	1955	1956	1957	1958
Jan.	$1.40	$1.92	$1.98	$2.65	$2.74	$2.92	$3.07	$1.30	$1.71	$1.75	$2.31	$2.41	$2.55	$2.71	$1.00	$1.41	$1.42	$1.84	$1.93	$2.05	$2.10
Feb.	1.42	1.93	1.99	2.65	2.75	2.91	3.08	1.30	1.71	1.77	2.33	2.44	2.56	2.71	1.00	1.40	1.42	1.85	1.93	2.05	2.10
Mar.	1.41	1.93	2.00	2.63	2.75	2.91	3.06	1.28	1.70	1.77	2.31	2.45	2.55	2.71	1.04	1.40	1.42	1.85	1.95	2.05	2.11
Apr.	1.42	1.93	1.99	2.63	2.75	2.92	3.06	1.31	1.71	1.75	2.34	2.42	2.58	2.68	1.06	1.40	1.43	1.86	1.96	2.05	2.11
May	1.43	1.93	2.00	2.63	2.76	2.94	3.06	1.31	1.71	1.76	2.34	2.44	2.61	2.69	1.07	1.40	1.44	1.87	1.96	2.06	2.11
June	1.44	1.92	2.00	2.64	2.78	2.94	3.06	1.31	1.70	1.76	2.34	2.48	2.62	2.67	1.08	1.41	1.45	1.87	1.97	2.07	2.12
July	1.47	1.92	2.01	2.66	2.79	2.96	3.09	1.36	1.71	1.78	2.36	2.49	2.65	2.71	1.09	1.41	1.46	1.89	1.96	2.07	2.13
Aug.	1.48	1.93	2.02	2.67	2.81	2.97	3.09	1.35	1.71	1.79	2.38	2.51	2.67	2.73	1.11	1.40	1.46	1.88	1.98	2.07	2.13
Sept.	1.51	1.94	2.07	2.68	2.84	3.02	3.13	1.37	1.73	1.83	2.39	2.53	2.70	2.78	1.13	1.41	1.48	1.90	2.01	2.08	2.14
Oct.	1.53	1.94	2.08	2.70	2.86	3.02	3.12	1.40	1.74	1.83	2.40	2.55	2.69	2.78	1.14	1.39	1.50	1.91	2.02	2.09	2.14
Nov.	1.55	1.95	2.09	2.71	2.87	3.03	....	1.43	1.75	1.84	2.40	2.54	2.70	....	1.15	1.39	1.51	1.93	2.03	2.11	2.17
Dec.	1.57	1.96	2.12	2.72	2.89	3.05	....	1.43	1.78	1.88	2.41	2.55	2.70	....	1.16	1.41	1.54	1.93	2.05	2.10	....

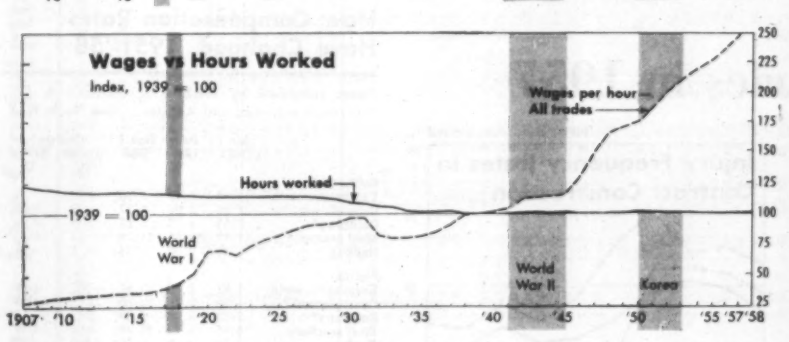
* Series revised March, 1948 to cover both public and private contract construction and to include workers engaged in off-site operations for construction as well as site workers.

UNION WAGE RATES for Building Trades average the highest in the Middle Atlantic. Lowest average wages are in the South Atlantic, as measured by Bureau of Labor Statistics figures which exclude fringe benefits.

Trade / Region:	US	New England I	Middle Atlantic II	Border States III	Southeast IV	Great Lakes V	Middle West VI	Southwest VII	Mountain VIII	Pacific IX
All building trades, July 1, 1957	**$3.20**	**$2.99**	**$3.50**	**$2.95**	**$2.70**	**$3.29**	**$3.11**	**$2.88**	**$2.92**	**$3.16**
Journeymen	3.39	3.23	3.72	3.28	2.97	3.45	3.29	3.08	3.16	3.30
Asbestos workers	3.43	3.25	3.70	3.44	3.17	3.53	3.43	3.26	3.30	3.27
Boilermakers	3.52	3.25	4.06	3.43	3.25	3.51	3.29	3.25	3.37	3.45
Bricklayers	3.76	3.55	4.05	3.61	3.43	3.71	3.74	3.63	3.63	3.75
Carpenters	3.30	3.10	3.73	3.14	2.79	3.39	3.18	2.94	3.12	3.14
Cement finishers	3.28	3.49	3.71	3.06	2.70	3.30	3.45	2.90	3.10	3.14
Electricians (inside wiremen)	3.50	3.24	3.72	3.45	3.15	3.53	3.50	3.22	3.30	3.62
Elevator constructors	3.50	3.31	3.79	3.39	3.14	3.55	3.42	3.26	3.26	3.51
Glaziers	3.09	2.87	3.43	3.00	2.43	3.26	3.18	2.72	2.63	3.01
Lathers	3.57	3.47	3.81	3.45	2.94	3.53	3.41	3.37	3.28	3.60
Machinists	3.42	3.25	3.62	3.43	3.10	3.42	3.46	3.24	3.08	3.34
Marble setters	3.47	3.44	3.64	3.44	3.41	3.50	3.35	3.11	3.03	3.42
Mosaic and terrazzo workers	3.44	3.45	3.78	3.30	3.21	3.41	3.47	3.01	3.00	3.23
Painters	3.17	2.90	3.22	2.95	2.71	3.29	3.10	2.88	3.00	3.21
Paperhangers	3.11	2.99	2.89	2.71	2.71	3.25	3.10	2.72	2.81	3.31
Pipefitters	3.53	3.28	3.84	3.29	3.22	3.53	3.51	3.32	3.29	3.50
Plasterers	3.63	3.56	3.97	3.45	2.94	3.55	3.55	3.33	3.28	3.65
Plumbers	3.55	3.25	3.84	3.32	3.24	3.52	3.51	3.25	3.26	3.56
Redmen	3.35	3.69	3.80	3.26	2.97	3.50	3.16	2.90	3.13	3.10
Roofers, composition	3.12	3.27	3.54	2.65	2.34	3.39	3.03	2.43	3.02	3.06
Roofers, slate and tile	3.21	3.48	3.49	3.27	2.44	3.42	3.00	2.74	3.02	3.10
Sheet-metal workers	3.35	3.24	3.67	3.33	2.97	3.42	3.32	3.05	3.01	3.29
Stonemasons	3.62	3.59	3.59	3.72	3.42	3.59	3.60	3.74	3.75	3.78
Structural ironworkers	3.48	3.70	3.94	3.53	3.08	3.54	3.25	3.08	3.13	3.34
Tile layers	3.40	3.44	3.63	3.37	3.16	3.46	3.19	3.03	3.04	3.34
Helpers and laborers	2.45	2.36	2.71	2.05	1.65	2.63	2.36	1.77	2.20	2.54
Bricklayers' tenders	2.61	2.34	2.93	2.06	1.60	2.68	2.50	1.85	2.54	2.82
Building laborers	2.37	2.35	2.56	2.02	1.66	2.60	2.29	1.69	2.10	2.46
Composition roofers' helpers	2.02	2.30	2.40	2.07	1.57	2.35	2.40	1.66	....	2.22
Elevator constructors' helpers	2.51	2.32	2.82	2.39	2.19	2.47	2.43	2.28	2.31	2.46
Marble setters' helpers	2.63	2.53	2.87	2.48	....	2.71	2.39	1.80	2.45	2.61
Plasterers' laborers	2.71	2.49	2.93	2.22	1.63	2.78	2.65	1.97	2.54	2.38
Plumbers' laborers	2.52	....	2.84	1.99	1.55	2.69	2.62	1.84	2.45	2.48
Terrazzo workers' helpers	2.76	2.60	3.04	2.33	....	2.79	2.58	1.85	2.31	2.76
Tile layers' helpers	2.64	2.59	2.83	2.44	....	2.70	2.32	1.81	2.45	2.52

Workers' Wages


Union Labor Trends
US Bureau of Labor Statistics
Wages vs Cost of Living
Index, 1939 = 100
Laborers & Helpers
Journeymen
Consumer Price Index
1939 = 100
World War I
World War II
Korea
'10 '15 '20 '25 '30 '35 '40 '45 '50 '55 '57 '58
325 300 275 250 225 200 175 150 125 100 75 50 25


Wages vs Hours Worked
Index, 1939 = 100
Wages per hour—All trades
Hours worked
1939 = 100
World War I
World War II
Korea
1907 '10 '15 '20 '25 '30 '35 '40 '45 '50 '55 '57 '58
250 225 200 175 150 125 100 75 50 25

BLS Trends in Individual Trades

Wages Per Hour: Index based on 1939=100

Year	All Building Trades	Journeyman	Helpers & Laborers	Bricklayers	Carpenters	Cement Finishers	Electrician, Inside Wiring	Glaziers	Lathers	Painters	Plasterers	Plumbers	Sheet Metal Workers	Steamfitters	Stonemasons	Structural Ironworkers	Building Laborers	Bricklayers' Tenders
1907M	29.3	29.7	27.3	37.7	29.8	34.5	27.9	....	....	26.2	37.3	33.3	30.6	30.1	33.9	27.9	30.8	30.3
1913M	36.1	36.9	31.8	41.5	36.8	38.0	33.8	....	34.6	35.5	39.3	37.9	35.6	35.0	36.7	37.3	34.2	31.8
1926M	88.3	88.7	84.9	94.1	88.5	86.6	81.5	80.7	83.0	90.9	92.4	83.9	86 3	84 9	92 7	81.1	86.9	85.5
1930M	97.0	97.5	93.3	101.8	96.9	95.4	90.9	92.6	89.6	100.6	98.1	91.5	94.7	93.5	99.1	92.5	92.9	94.9
1932M	83.1	83.6	79.2	87.0	79.6	83.6	87.9	78.0	80.0	85.3	81.4	80.5	83.4	81.0	88.4	81.0	78.7	78.4
1938J	99.3	99.3	99.2	99.5	99.8	99.6	99.5	99.3	96.8	99.2	99.2	99.1	98.6	99.3	99.7	98.9	99.4	99.7
1942	111.9	110.9	117.5	108.3	112.1	110.8	113.5	108.8	109.1	110.5	105.0	110.5	116.0	106.3	108.0	108.7	119.6	115.7
1946	129.3	126.8	146.3	125.6	129.7	128.2	124.9	123.4	124.2	127.3	119.0	123.2	133.0	124.6	126.5	121.4	152.2	141.7
1948	163.5	159.4	192.7	165.6	164.7	161.1	154.4	155.5	157.8	154.4	148.2	158.2	164.4	154.3	166.0	151.9	200.8	185.5
1949	170.3	166.1	199.8	174.0	169.1	165.8	168.1	160.5	164.2	162.1	161.9	162.8	169.6	161.3	175.7	157.4	208.4	190.4
1950	177.8	173.2	210.8	180.4	177.4	172.7	172.3	169.4	179.6	167.7	169.3	166.7	177.9	168.3	187.1	164.8	220.0	203.4
1951	189.1	184.0	225.3	188.0	189.1	183.7	183.4	177.8	188.0	178.7	177.5	176.6	188.1	178.6	193.6	175.7	235.6	213.9
1952	200.8	195.3	240.0	203.9	200.6	192.2	196.0	186.0	194.4	190.2	187.6	187.0	202.2	189.1	207.5	184.0	251.7	228.0
1953	211.2	204.9	256.6	210.0	211.1	203.8	204.0	199.1	203.4	199.5	194.8	193.8	211.5	197.9	210.9	194.5	270.8	240.0
1954	218.9	212.2	267.7	216.8	217.9	209.7	210.0	204.9	208.7	205.7	198.4	204.5	221.5	208.5	215.7	201.3	282.6	250.4
1955	226.6	219.4	279.1	222.6	225.9	217.9	214.8	214.0	214.2	213.9	204.3	209.4	230.0	213.5	222.1	208.9	295.3	260.6
1956	237.1	229.2	295.9	232.6	235.4	228.4	226.6	225.2	223.3	222.5	212.1	218.7	240.4	223.3	232.1	217.7	312.1	281.2
1957	249.3	240.8	313.2	241.7	247.8	239.9	237.9	236.8	232.7	234.3	219.9	230.8	251.8	235.2	238.8	229.0	331.7	296.0

Hours Worked Per Week: Index based on 1939=100

1907M	124.3	123.8	126.1	122.9	121.0	122.7	124.2	....	....	133.1	125.8	120.6	117.0	120.3	118.4	121.3	121.6	118.9
1913M	118.2	118.0	118.3	114.9	115.6	119.8	120.7	....	121.8	125.9	124.3	119.2	114.9	118.0	115.7	114.1	118.3	116.0
1926M	114.9	115.1	113.9	113.3	113.5	113.4	115.9	117.5	118.9	120.7	118.2	116.5	111.8	114.4	114.5	112.8	112.1	113.9
1930M	109.8	110.0	109.0	107.1	109.4	108.1	109.9	112.4	110.4	115.4	113.0	109.9	106.9	108.5	107.1	108.8	110.0	106.9
1932M	106.5	106.6	105.7	103.1	105.0	105.6	106.2	107.9	109.3	114.2	110.1	108.0	103.6	106.4	104.8	104.8	104.9	104.0
1938J	100.2	100.1	100.2	99.0	100.0	100.0	100.2	100.2	100.8	110.4	100.0	99.7	100.0	99.6	100.1	100.1	100.1	100.3
1942	101.1	101.8	98.8	100.8	100.8	100.6	104.5	102.0	102.5	106.5	102.0	99.9	100.9	102.2	100.2	101.1	98.8	98.6
1946	100.2	101.1	97.5	100.3	103.3	100.4	100.4	102.0	102.2	106.1	104.1	98.3	100.8	101.3	100.0	101.1	97.2	96.9
1948	100.1	101.0	97.4	100.5	100.2	100.0	100.4	103.5	98.1	106.2	102.9	97.6	100.1	101.3	101.0	101.1	97.2	96.4
1949	100.2	101.1	97.4	100.1	100.2	100.0	102.1	103.5	98.1	106.2	103.5	97.6	99.9	101.3	100.8	101.1	97.2	96.4
1950	100.3	101.2	97.4	100.1	100.2	100.0	102.1	103.5	100.2	106.2	105.9	98.2	99.9	101.3	100.8	101.1	97.2	96.4
1951	100.2	101.1	97.3	100.2	100.2	100.0	102.1	103.5	100.2	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.0	96.2
1952	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	100.2	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.3
1953	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	100.3	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.3
1954	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	99.8	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.3
1955	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	99.8	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.2
1956	100.2	101.1	97.5	100.2	100.2	100.0	101.0	103.5	99.8	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.2
1957	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	99.8	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.2

*M May 1. *J June 1. *All others July 1.

WAGE RATES in 51 cities not covered by ENR: BLS rates for Oct. 1, 1958.

	Bricklayer	Carpenter	Electrician
Albuquerque, N. M.	$3.900	$3.175	$3.450+3½¢
Burlington, Vt.	3.650	2.750	2.375
Butte, Mont.	3.500	3.125	3.450+3½¢
Charlotte, N.C.	3.100	2.400	2.900+3¢
Chattanooga, Tenn.	3.750	3.050	3.400+3¢
Cheyenne, Wyo.	3.750	2.940	3.280+3¢
Columbia, S. C.	2.500	2.000	2.850+3¢
El Paso, Tex.	3.750	3.100	3.450+3½¢
Erie, Pa.	3.900+7½¢	3.490	3.675+4¢
Evansville, Ind.	3.625	3.100	3.430+4¢
Fargo, N. Dak.	3.600	2.620	3.100
Grand Rapids, Mich.	3.950	3.300+8¢	3.460+11½¢
Hartford, Conn.	3.750+22¢	3.350+22¢	3.900+12¢
Houston, Tex.	3.875	3.075	3.650+11½¢
Knoxville, Tenn.	3.650	2.925	3.280+3¢
Lansing, Mich.	3.880	3.330+8¢	3.600+12¢
Las Vegas, Nev.	4.150	3.575+8½¢	4.050+14¢
Little Rock, Ark.	3.500	3.000	3.250+3¢
Madison, Wisc.	3.550	3.100	3.550+15¢
Manchester, N. H.	3.750	3.090	3.100+3¢
Memphis, Tenn.	3.750	2.950	3.450+10½¢
Miami, Fla.	3.600	3.250	3.500+9¢
Mobile, Ala.	3.785	3.050+10¢	3.525+14¢
Montgomery, Ala.	3.250	2.450	3.000+3¢
New Haven, Conn.	3.650+22¢	3.350+22¢	3.750+11½¢
Norfolk, Va.	3.500	2.600	3.300+3¢
Oakland, Calif.	3.750+15¢	3.325+20¢	3.910+14¢
Peoria, Ill.	3.925	3.500+3½¢	3.700+9¢
Portland, Maine	3.500	2.850	3.150+3¢
Providence, R. I.	3.600+7½¢	3.075+7½¢	3.400+13¢
Reading, Pa.	3.700+12½¢	3.100	3.550+14¢
Richmond, Va.	3.500	2.600	3.150+3¢
Rochester, N. Y.	3.835+15¢	3.550	3.670+14¢
Rock Island, Ill.	3.750	3.150	3.650+4¢
Santa Fe, N. M.	3.900	3.175	3.450+3¢
Savannah, Ga.	3.400	3.000	3.350+3¢
Schenectady, N. Y.	3.600+10¢	3.275+7½¢	3.650+14¢
Scranton, Pa.	3.625	3.050	3.350+13¢
Shreveport, La.	3.750	2.825	3.475+3¢
Sioux Falls, S. D.	3.625	2.650	3.300+3¢
South Bend, Ind.	3.800+9¢	3.125	3.500+4¢
Spokane, Wash.	3.890	3.130+10¢	3.575+4¢
Springfield, Mass.	3.525+11¢	3.200+10¢	3.375+18¢
Syracuse, N. Y.	3.725+7½¢	3.345+7½¢	3.800+13¢
Tampa, Fla.	3.400	2.900	3.350+3¢
Washington, D. C.	3.900+9¢	3.500+9¢	3.900+14¢
Wichita, Kan.	3.750	3.000	3.350+3¢
Wilmington, Del.	3.825+10¢	3.550	3.825+14¢
Worcester, Mass.	3.650+15¢	3.400+10¢	3.400+13¢
York, Pa.	3.425	2.850	3.350+3¢
Youngstown, Ohio	3.855+10¢	3.675	3.750+4¢

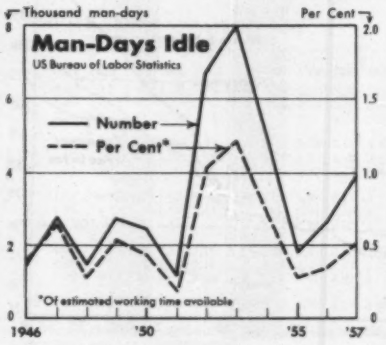
	Painter	Plasterer	Laborer
Albuquerque, N. M.	$2.875	$3.500	$2.075
Burlington, Vt.	1.750	3.500	2.050
Butte, Mont.	2.900+7¢	3.250	2.300
Charlotte, N. C.	2.000	2.625	1.335
Chattanooga, Tenn.	2.800	3.300	1.900
Cheyenne, Wyo.	2.850	3.250	1.950
Columbia, S. C.	2.250	2.500	....
El Paso, Tex.	2.675	3.250	1.700
Erie, Pa.	3.040	3.575	2.550+10¢
Evansville, Ind.	3.100+10¢	3.350	2.200+7½¢
Fargo, N. Dak.	2.500	3.250	1.920
Grand Rapids, Mich.	2.800+8¢	3.400	2.500+8¢
Hartford, Conn.	3.100+10¢	3.750+22¢	2.500+7¢
Houston, Tex.	3.100+7½¢	3.500+10¢	1.850
Knoxville, Tenn.	2.700	3.250	1.825
Lansing, Mich.	3.080+9¢	3.880+10¢	2.530+8¢
Las Vegas, Nev.	3.450+10¢	4.150+10¢	2.850
Little Rock, Ark.	2.600	3.300	1.600
Madison, Wisc.	3.000+7¢	3.400	2.550
Manchester, N. H.	2.430+7½¢	3.750	2.400
Memphis, Tenn.	2.870	3.220	1.600
Miami, Fla.	3.120+10¢	3.600	1.680
Mobile, Ala.	3.025	3.400+10¢	1.780+10¢
Montgomery, Ala.	2.500	2.750	1.200
New Haven, Conn.	3.100+22¢	3.650+22¢	2.600+7¢
Norfolk, Va.	2.720	3.250	1.500
Oakland, Calif.	3.350+14½¢	3.540+15¢	2.685+10¢
Peoria, Ill.	3.225	3.775+10¢	2.850
Portland, Maine	2.100	3.250	2.200
Providence, R. I.	2.700+8½¢	3.550+15¢	2.375+7½¢
Reading, Pa.	2.700+11¢	3.350	2.160+5¢
Richmond, Va.	2.250	3.120	1.500
Rochester, N. Y.	3.330	3.835+15¢	2.715+7½¢
Rock Island, Ill.	3.000+10¢	3.400	2.500
Santa Fe, N. Mex.	2.875	3.500	2.075
Savannah, Ga.	2.500	2.750	1.550
Schenectady, N. Y.	2.850	3.600+10¢	2.500+7½¢
Scranton, Pa.	2.625	3.525	2.325
Shreveport, La.	2.825	3.250	1.650
Sioux Falls, S. D.	2.350	3.000	1.875
South Bend, Ind.	2.900	3.310+7½¢	2.400+7½¢
Spokane, Wash.	3.000+7½¢	3.450+10¢	2.400+10¢
Springfield, Mass.	2.950+10¢	3.525+10½¢	2.325+7½¢
Syracuse, N. Y.	3.000	3.600+7½¢	2.575+7½¢
Tampa, Fla.	2.650	3.400	1.475
Washington, D. C.	3.465+10¢	3.700+15¢	2.300+7½¢
Wichita, Kan.	2.750	3.375	2.200
Wilmington, Del.	3.075+10¢	3.700+15¢	2.150
Worcester, Mass.	2.900+15¢	3.650+15¢	2.550+10¢
York, Pa.	2.450	3.250	1.925
Youngstown, Ohio	3.315+10¢	3.725+10¢	2.645+10¢

Work Stoppages Hike Idle Time

Increased strike activity in construction is adding to contractors' cost problems by upsetting job schedules.

Strikes increased from a four-year low of 733 in 1955 to 785 in 1957. Also, stoppages tended to involve more workers. Result: Man-days lost rose from 1.8 million in 1955 to 3.97 in 1957, U.S. Bureau of Labor Statistics data shows.

This uptrend may be accelerating. Though BLS' 1958 report is not yet ready, about 2.2 million man-days were lost in five strikes involving over 10,000 workers each. Only three such major strikes in 7 resulted in about 1.1 million man-days lost.



Fewer Work Injuries in 1957

Injury rates in contract construction set a new post-war low in 1957.

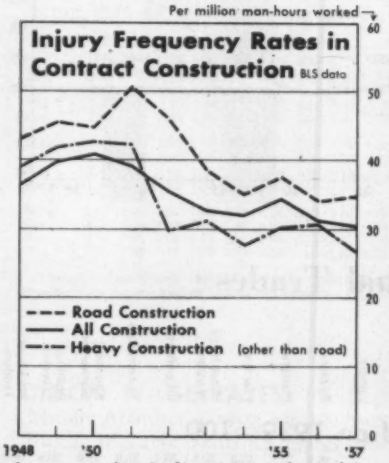
The average frequency rate was 30.3 disabling injuries per million man-hours worked. This compares with a frequency of 31.2 in 1956 and a post-war high of 41.0 injuries per million man-hours in 1950, the U. S. Bureau of Labor Statistics reports (see table below, chart at right).

Contractors in heavy construction showed the greatest improvement in their 1957 safety records.

In contrast to decreased frequency of injuries in '57, cases tended to be more serious than in '56. The injury severity rate (average days lost per 1,000 man-hours worked) increased in '57 to a total of 2.52, compared with 2.33 in 1956. Moreover, average days lost per injury rose from 85 in '56 to 95 in '57. And there were slightly more deaths among those workers permanently impaired during 1957.

Several minor disasters on construction projects accounted for the increase.

Though part of the 1957 decrease in work injuries was due to a drop in employment, the decline in number of injuries from 218,000 in 1956 to 200,000 in 1957 was relatively greater than the drop in employment.



The BLS work injury data for contract construction is based on a sample of 5,096 contractors in 1957 and 5,734 contractors in 1956.

Compensation Insurance Costs on Construction

Compensation insurance rates are important in cost estimating. They are multiplied by each $100 of wages paid.

The November 1, 1958, rates for most trades and common types of work they handle are shown for 49 states (including Alaska) and the District of Columbia in the table on the opposite page. They are compiled by Herbert L. Jamison & Co.

The table below shows substantial changes in rates between 1951-58 and '57-'58. New legal requirements and changes in benefits paid can account for rate changes just as do experience records. (See annual ENR cost issues for rates in previous years.)

How Compensation Rates Have Changed, 1951-'58

Rates compiled by Herbert L. Jamison & Co., Insurance Advisors and Auditors, New York, N. Y.

	Jan 1 1951	Jul 1 1957	Nov 1 1958	Change† '51-'58 %	Change† '57-'58 %
California					
Excavation, earth	1.86	2.10	2.10	+13	0
Concrete work*	1.26	1.02	1.27	+ 1	+25
Carpentry*	3.53	4.75	5.23	+48	+10
Steel erection/	12.83	10.55	11.18	−13	+ 6
Roofing	6.23	6.90	6.34	+ 2	− 8
Florida					
Excavation, earth	1.92	2.78	3.97	+107	+43
Concrete work*	1.70	2.71	2.80	+65	+ 3
Carpentry*	2.15	3.48	3.03	+41	−13
Steel erection/	9.46	11.93	15.48	+64	+30
Roofing	3.34	4.98	6.99	+109	+40
Massachusetts					
Excavation, earth	4.13	4.44	4.37	+ 6	− 2
Concrete work*	4.38	4.13	3.37	−23	−18
Carpentry*	3.58	5.07	5.37	+50	+ 6
Steel erection/	20.02	25.75	24.57	+23	− 5
Roofing	13.35	17.57	14.04	+ 5	−20
New York					
Excavation, earth	6.95	5.20	5.20	−25	0
Concrete work*	6.39	5.10	5.10	−20	0
Carpentry*	5.97	4.40	4.40	−26	0
Steel erection/	23.17	13.80	13.80	−40	0
Roofing	**	8.90	8.90	....	0
Ohio					
Excavation, earth	1.30	2.03	1.94	+49	− 4
Concrete work*	1.22	1.21	1.20	− 2	− 1
Carpentry*	2.32	2.11	2.12	− 9	+ 0.5
Steel erection/	5.74	5.92	6.29	+10	+ 6
Roofing	4.18	4.73	4.60	+10	− 3
Texas					
Excavation, earth	2.33	3.53	4.62	+98	+31
Concrete work*	3.32	3.44	3.05	− 8	−11
Carpentry*	3.32	3.31	3.72	+12	+12
Steel erection/	8.91	13.97	19.58	+120	+40
Roofing	5.37	8.60	8.91	+66	+ 4

*† Not adjusted for any legal requirements or changes in benefits which may have affected rates **3 stories or less */ Structural ***Rate varies with type of work

Work Injury Rate Drops, But Severity Increases BLS data

	Number of establishments reporting 1957	Number of establishments reporting 1956	Injury frequency a 1957	Injury frequency a 1956	Severity rate b 1957	Severity rate b 1956	Average days lost c 1957	Average days lost c 1956	1957 Injuries Per cent resulting in Death	1957 Injuries Per cent resulting in Perm impair d	1957 Injuries Per cent resulting in Temp total	1956 Injuries Per cent resulting in Death	1956 Injuries Per cent resulting in Perm impair d	1956 Injuries Per cent resulting in Temp total
Contract construction	5,096	5,734	30.3	31.2	2.52	2.33	95	85	0.9	3.0	96.1	0.8	2.5	96.7
General building contractors	1,577	1,836	32.4	34.5	1.95	1.83	56	53	0.4	2.7	96.9	0.3	2.5	97.2
Heavy construction	302	367	26.6	30.9	4.41	3.84	166	121	1.9	3.5	94.6	1.4	2.5	96.1
Highway & street	539	603	34.8	34.2	4.15	3.86	119	113	1.1	3.9	95.0	1.3	2.9	95.8
Special-trade contractors	2,678	2,928	28.9	28.1	2.14	2.04	82	85	0.7	2.4	96.9	0.8	2.4	96.8
Plumb, heat, air cond	680	768	25.9	26.2	1.07	1.02	42	39	0.3	1.5	98.2	0.3	1.8	97.9
Painting & decorating	250	309	22.6	18.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Electrical	402	415	25.7	21.6	0.93	1.39	36	65	0.2	1.9	97.9	0.8	1.7	97.5
Masonry, stonework, tile setting & plastering	424	515	31.6	29.2	4.71	0.98	149	34	1.4	3.8	94.8	0.2	1.1	98.7
Roofing & sheet-metal	256	278	39.8	53.3	1.49	3.61	37	68	...	2.0	98.0	0.4	1.7	97.9
Structural steel erection	67	56	31.0	32.4	6.31	10.86	203	335	2.5	3.5	94.0	3.8	5.4	90.8
Misc. spec-trade contractors	599	557	31.4	30.2	1.42	2.44	59	80	0.6	2.0	97.4	0.7	2.9	96.4

*a average number of disabling work injuries per million employee-hours worked *b average number of days lost for each 1,000 employee-hours worked; *c charged to each case *d includes permanent-total and permanent-partial impairments

Base Rates on Compensation Insurance for Construction—Nov. 1, 1958

Data Compiled by Herbert L. Jamison & Co., Insurance Advisers and Auditors, New York, N. Y.—(Base Rates in effect Nov. 1, 1958—subject to increase or decrease according to experience ratings)

Classification of work	Ala.	Alas.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D.C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kans.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.
Carpentry—1-2 Family Residences	$1.52	$2.23	$3.44	$3.50	$2.61	$1.80	$3.10	$1.35	$2.99	$3.03	$1.89	$3.05	$2.06	$1.86	$1.51	$2.36	$1.96	$4.50	$1.53	$2.50	$3.15	$2.10	$2.65	$2.31	$2.30
Carpentry—3 stories or less	1.63	3.54	3.44	3.83	5.23	2.60	3.51	1.35	2.99	3.03	1.89	3.10	2.88	2.01	2.01	2.44	2.06	4.90	1.55	2.55	5.37	2.10	2.65	3.36	2.65
Carpentry—Interior trim, cabinet work	0.72	1.87	3.44	1.93	5.23	1.22	2.14	1.35	3.43	3.14	1.01	1.55	1.39	1.01	0.89	1.42	0.98	2.55	0.74	1.94	1.78	1.34	2.65	2.10	2.75
Carpentry—General	2.02	4.78	3.44	4.89	5.23	3.47	4.09	1.35	4.26	4.81	3.03	5.14	3.61	2.58	2.67	5.40	2.33	6.49	2.67	4.96	8.32	2.10	5.24	5.56	3.81
Chimney Construction, brick, concrete	5.29	4.22	5.76	13.94	13.07	9.17	13.77	1.90	17.26	14.83	4.58	13.02	8.14	7.77	5.85	11.50	8.37	18.70	4.91	12.21	6.32	8.60	11.44	14.29	16.58
Concrete Work—Bridges—Culverts	2.94	7.48	6.05	5.19	6.01	5.00	6.40	1.90	10.36	5.53	4.11	6.63	4.40	2.67	4.15	5.21	2.36	6.63	3.58	4.93	5.29	3.74	5.77	6.52	6.40
Concrete Work—3 stories or less	0.93	4.92	2.66	1.14	1.27	1.38	2.76	1.90	4.32	2.80	0.85	2.47	1.06	1.14	1.09	1.56	1.19	2.63	1.32	2.10	3.37	1.35	2.05	2.10	1.88
Concrete Work—General	1.79	4.27	2.66	4.67	3.37	3.41	5.39	1.90	5.61	4.70	2.25	3.43	3.03	2.29	1.78	4.18	1.55	5.63	1.55	3.79	7.13	2.74	2.49	3.08	4.77
Concrete or Cement Walks, Floors	0.76	2.78	2.66	1.74	1.30	1.31	3.02	1.45	1.87	2.83	1.32	1.93	1.39	0.97	1.18	2.13	1.07	2.85	0.93	2.84	3.05	1.16	1.95	1.87	1.97
Electrical Wiring	0.93	1.35	1.87	1.85	1.65	1.58	1.55	1.00	2.25	2.36	1.37	1.88	1.12	1.21	0.85	1.67	0.86	2.18	0.72	1.77	1.59	1.09	1.30	1.80	1.81
Excavation—Earth	2.00	4.65	3.12	3.42	2.10	3.13	5.12	1.85	4.03	3.97	2.70	5.49	2.42	1.84	1.89	3.61	2.22	3.90	1.65	3.40	4.37	2.02	4.37	5.11	3.93
Excavation—Rock—C	3.32	7.04	5.12	6.19	6.13	5.97	9.37	1.85	7.24	9.11	4.00	6.60	7.31	4.26	2.76	6.73	5.16	8.91	2.53	6.04	8.90	4.08	4.40	7.05	7.70
Glazing	2.01	3.15	2.89	4.94	3.91	3.38	5.30	1.15	5.70	4.03	2.78	4.61	2.66	2.47	2.36	4.00	2.86	5.41	1.98	4.57	4.88	3.19	4.37	5.26	4.06
Insulating	0.85	2.98	2.52	2.05	3.20	1.75	2.27	1.35	2.45	2.39	0.91	2.62	2.03	1.37	1.29	1.78	0.99	3.47	1.23	1.85	3.34	1.29	3.10	2.52	2.37
Lathing	0.95	2.86	2.50	2.58	1.68	1.60	2.68	0.75	2.63	2.25	1.39	2.08	1.06	1.31	1.15	1.83	1.29	3.32	0.98	2.17	2.93	0.99	1.65	2.71	2.21
Masonry	0.94	3.92	2.20	1.74	2.36	1.38	3.09	0.65	2.27	2.65	0.94	2.51	1.64	1.29	1.09	1.56	1.21	2.63	1.34	2.28	3.47	1.46	1.60	2.13	2.47
Painting and Decorating	1.23	3.17	2.20	2.62	2.59	1.55	3.54	1.35	5.01	3.08	1.49	3.53	1.85	1.90	1.41	1.91	1.66	3.06	1.13	3.24	3.29	1.72	2.14	2.88	2.91
Pile Driving—N.O.C.	5.10	9.60	11.56	13.26	11.08	8.88	5.63	5.20	11.62	10.97	6.77	11.88	7.13	6.05	4.36	10.55	6.47	12.19	2.45	6.71	7.93	5.77	7.40	11.42	8.84
Plastering	0.85	2.53	2.52	2.05	1.68	1.75	2.27	0.75	2.45	2.70	0.91	2.62	1.11	1.37	1.29	1.78	0.99	2.18	1.23	1.85	2.69	1.29	1.65	2.52	1.53
Plumbing	0.80	1.53	2.08	2.09	1.83	1.51	1.99	0.65	2.19	2.22	1.59	1.74	1.50	1.34	1.14	1.86	1.06	2.97	0.66	2.00	1.77	1.17	2.09	1.83	2.92
Roofing	2.85	5.98	5.60	7.75	6.34	5.21	7.80	1.40	7.20	6.99	3.42	8.88	5.47	4.36	4.67	5.93	3.39	5.70	3.86	6.97	14.04	3.61	8.07	7.28	6.82
Sheet Metal Work	1.34	2.23	2.20	3.48	2.27	1.74	2.77	1.40	2.55	2.97	1.71	2.61	1.59	1.94	1.49	2.25	1.69	3.31	1.03	2.35	2.39	1.53	1.97	4.16	2.49
Steel Erection—Doors—Sash	1.32	4.00	1.47	3.19	2.32	2.28	4.13	5.65	4.26	3.06	1.66	2.90	1.91	2.08	1.59	2.64	1.84	4.78	1.38	2.93	3.65	1.82	2.84	3.62	2.82
Steel Erection—Interior Ornament	1.32	4.00	1.47	3.19	2.32	2.28	4.13	5.65	4.26	3.06	1.66	2.90	1.91	2.08	1.59	2.64	1.84	4.78	1.38	2.93	3.65	1.82	2.84	3.62	2.82
Steel Erection—Structural	5.51	28.63	12.15	14.68	11.18	11.48	11.01	5.65	27.63	15.48	9.77	19.01	8.45	5.97	11.44	15.76	7.73	13.19	5.76	11.98	24.57	9.87	11.80	11.58	11.97
Steel Erection—Dwelling—2 stories	3.02	11.62	3.96	7.71	4.44	5.80	7.79	5.65	9.17	7.18	4.36	8.62	5.53	3.38	3.94	7.18	3.83	8.46	2.88	6.74	10.62	3.39	7.09	7.79	7.70
Steel Erection—General	3.93	13.08	12.15	9.78	6.27	10.09	9.53	5.65	17.72	10.14	8.19	12.46	8.45	5.97	5.69	8.77	5.02	13.19	3.62	9.92	13.82	5.15	8.44	9.80	10.44
Tile Work—Interior	0.62	0.84	1.71	1.65	1.00	1.04	1.73	0.55	2.41	1.47	0.91	1.32	0.85	0.87	0.77	1.21	0.82	1.76	0.66	1.40	2.08	0.93	1.44	1.78	1.50
Timekeepers and Watchmen	1.41	4.85	1.53	2.98	2.25	2.31	4.28	B	3.71	3.84	2.01	3.25	2.77	2.05	1.68	2.73	1.93	4.92	1.47	3.33	5.60	2.17	3.48	3.33	4.25
Waterproofing—Interior—(Brush)	1.23	3.17	2.20	2.62	2.59	1.55	3.54	1.35	5.01	3.08	1.49	3.53	1.85	1.90	1.41	1.91	1.66	3.06	1.13	3.24	3.29	1.72	2.14	2.88	2.91
Waterproofing—Trowel—Interior	0.85	2.53	2.52	2.05	1.68	1.75	2.27	1.75	2.45	2.10	0.91	2.62	1.11	1.37	1.29	1.78	0.99	2.10	1.23	1.85	2.69	1.29	1.65	2.52	1.53
Waterproofing—Trowel—Exterior	0.94	3.92	2.20	1.74	2.36	1.38	3.09	0.65	2.27	2.65	0.94	2.51	1.64	1.29	1.09	1.56	1.21	2.63	1.34	2.28	3.47	1.46	1.60	2.13	2.47
Waterproofing—Pressure Gun	1.79	4.27	2.66	4.67	3.37	3.41	5.39	1.90	5.61	4.90	2.25	3.43	3.03	2.29	1.78	4.18	1.55	5.63	1.55	3.79	7.13	2.74	2.49	3.08	4.77
Wrecking	7.31	13.04	13.33	19.66	21.00	13.90	15.56	9.50	18.65	16.78	8.85	18.67	14.19	6.07	7.82	11.12	10.09	19.59	8.10	16.91	23.63	8.72	16.55	16.38	18.93

Classification of work	Mont.	Neb.	D Nev.	N.H.	N.J.	N.M.	N.Y.	N.C.	D N.D.	D Ohio	Okla.	D Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Texas	Utah	Vt.	Va.	D Wash.	D W. Va.	Wis.	D Wyo.
Carpentry—1-2 Family Residences	$3.25	$2.14	$4.45	$1.89	$3.20	$3.05	$3.00	$2.48	$2.56	$1.96	$4.67	$4.45	$1.40	$3.01	$2.39	$0.94	$2.72	$3.72	$2.11	$2.42	$1.69	$3.87	$1.96	$2.02	$1.86
Carpentry—3 stories or less	3.36	2.60	4.60	2.05	3.40	3.80	4.40	3.04	2.56	2.12	6.04	4.55	1.40	3.55	2.41	0.96	2.75	3.72	2.11	2.46	2.03	3.98	2.06	2.72	1.86
Carpentry—Interior trim, cabinet work	1.63	1.10	3.77	1.04	1.55	1.63	4.40	1.56	2.56	1.06	4.52	2.06	1.40	2.56	1.40	0.73	1.54	3.07	2.11	1.02	0.94	1.27	0.98	2.02	1.86
Carpentry—General	5.69	3.06	7.61	2.73	4.40	5.72	4.40	4.10	5.07	2.72	7.05	5.23	1.40	6.88	5.40	2.69	3.54	5.40	2.11	3.03	1.97	5.11	2.33	3.28	1.86
Chimney Construction, brick, concrete	14.82	8.29	20.30	7.43	11.60	11.66	29.60	11.14	11.06	8.19	19.51	9.24	1.55	21.46	12.19	3.84	11.04	15.05	9.01	7.03	5.74	8.67	8.37	10.28	7.92
Concrete Work—Bridges—Culverts	4.96	3.35	9.36	4.42	5.70	7.54	6.10	4.97	5.58	2.81	11.83	6.38	1.55	8.25	7.50	2.55	4.21	9.55	4.44	4.28	2.07	5.78	7.36	4.09	3.91
Concrete Work—3 stories or less	2.57	1.33	3.52	1.72	2.65	1.50	5.10	1.00	1.98	1.20	2.75	3.97	1.55	3.88	1.06	0.86	1.54	3.05	1.95	2.12	0.94	3.66	1.19	1.47	1.72
Concrete Work—General	4.96	3.94	6.80	2.39	5.70	2.44	5.10	2.88	2.41	2.41	11.10	4.56	1.55	7.90	2.75	1.89	2.92	5.40	2.37	2.54	2.17	4.20	1.55	2.43	2.09
Concrete or Cement Walks, Floors	2.02	1.55	2.77	1.28	2.25	1.89	2.70	1.35	1.89	1.02	3.10	2.24	1.20	2.81	1.66	0.86	1.45	3.16	1.06	1.27	1.05	1.94	1.07	1.68	0.93
Electrical Wiring	1.62	1.12	2.22	1.35	1.90	2.14	2.50	1.26	1.26	1.28	2.55	2.15	0.85	1.23	1.67	0.73	1.40	2.08	1.11	1.07	0.97	1.95	0.86	1.34	0.98
Excavation—Earth	5.35	2.29	7.32	3.61	3.90	3.77	5.20	3.09	4.23	1.94	6.59	5.08	1.85	4.18	2.82	1.38	3.65	4.62	2.91	2.74	1.86	4.40	2.22	2.66	2.56
Excavation—Rock—C	7.70	4.80	10.66	5.48	9.80	6.17	8.50	9.64	4.25	4.49	7.50	10.15	1.85	10.10	5.82	2.43	5.15	9.83	3.30	4.68	3.82	9.32	5.16	7.19	2.90
Glazing	4.99	3.10	6.84	2.81	4.40	4.46	4.50	3.96	4.23	2.60	5.54	4.70	1.40	7.59	4.52	1.70	4.03	3.72	1.12	2.81	1.92	4.35	2.86	3.72	0.99
Insulating	2.80	1.27	3.84	1.69	4.80	2.71	4.40	1.48	3.00	1.44	5.28	4.00	1.40	3.40	1.88	1.09	1.97	4.35	2.61	1.65	0.99	3.40	0.99	2.74	2.30
Lathing	2.23	1.45	3.06	1.36	2.20	2.11	2.60	1.88	1.60	1.38	2.83	3.90	0.75	3.44	2.10	0.87	2.07	2.25	1.63	1.32	1.29	3.30	1.29	1.31	1.43
Masonry	2.61	1.36	3.66	1.75	3.30	2.18	4.20	1.02	1.55	1.36	2.75	4.07	1.20	3.97	1.07	0.87	1.54	3.05	1.52	2.16	0.82	3.77	1.21	1.72	1.34
Painting and Decorating	3.84	1.98	5.26	2.96	5.00	3.08	4.80	2.28	2.07	2.00	3.55	4.55	2.10	2.69	2.63	1.43	2.10	3.09	1.56	1.91	1.66	4.19	1.66	2.04	1.37
Pile Driving—N.O.C.	13.04	7.02	17.86	3.76	7.50	11.70	8.40	8.23	7.16	6.38	17.64	11.09	2.15	8.15	8.30	4.60	11.09	14.82	5.42	3.67	4.60	9.79	6.47	8.45	4.77
Plastering	2.80	1.27	3.84	1.69	2.20	2.71	3.70	1.48	1.60	1.44	3.49	4.00	0.75	3.40	1.88	1.09	1.97	2.48	2.61	1.65	0.99	3.40	0.99	1.15	2.30
Plumbing	1.71	1.11	2.34	1.26	2.40	2.17	3.00	1.56	2.02	1.41	2.68	1.90	0.85	1.89	1.80	0.75	1.45	2.83	1.26	1.36	1.08	1.72	1.06	1.63	1.11
Roofing	9.64	5.40	13.21	6.57	9.40	7.53	8.90	6.13	7.80	4.60	18.03	10.87	2.60	10.11	5.17	3.28	5.02	8.91	4.71	5.36	3.24	10.65	3.39	10.55	4.14
Sheet Metal Work	2.69	2.04	3.69	1.64	2.40	2.99	4.30	2.39	1.90	2.04	3.36	4.38	2.60	3.36	2.44	1.05	2.43	3.91	1.79	1.65	1.35	3.75	1.69	2.00	1.58
Steel Erection—Doors—Sash	3.13	2.05	4.28	1.92	4.80	2.96	3.20	2.65	2.75	2.19	5.26	3.47	4.20	4.85	2.69	1.23	2.91	3.70	1.63	1.88	1.48	3.26	1.84	3.12	1.43
Steel Erection—Interior Ornament	3.13	2.05	4.28	1.92	4.80	2.96	3.20	2.65	2.75	2.19	5.26	3.47	4.20	4.85	2.69	1.23	2.91	3.70	1.63	1.88	1.48	3.26	1.84	3.12	1.43
Steel Erection—Structural	19.54	8.58	26.77	8.76	16.40	9.71	13.80	10.29	11.41	6.29	18.22	17.26	4.20	19.27	13.41	5.27	9.30	19.58	6.79	10.11	6.09	15.86	7.73	8.08	5.98
Steel Erection—Dwelling—2 stories	8.39	5.11	11.49	4.26	5.70	8.34	4.40	5.61	6.86	3.56	13.09	8.10	4.20	11.23	8.07	2.58	4.65	10.77	5.17	4.81	3.01	7.51	3.83	4.70	4.55
Steel Erection—General	13.40	7.54	18.35	7.50	7.90	9.71	10.80	6.96	8.16	6.39	18.22	12.31	4.20	16.31	7.82	2.66	5.76	10.77	6.79	7.23	3.90	10.56	5.02	7.37	5.98
Tile Work—Interior	1.37	0.97	1.88	0.91	1.60	1.44	2.10	1.08	1.39	0.92	2.00	1.48	0.65	2.18	1.30	0.62	1.05	1.70	1.76	0.94	0.66	1.38	0.82	0.90	1.55
Timekeepers and Watchmen	3.13	2.24	4.29	2.03	3.00	3.25	3.60	2.77	3.37	2.16	4.10	3.99	B	5.28	2.60	1.37	2.97	1.72	2.39	2.03	1.68	4.18	1.93	3.05	2.06
Waterproofing—Interior—(Brush)	3.84	1.98	5.26	2.96	5.00	3.08	4.80	2.28	2.07	2.00	3.00	4.55	4.20	2.69	2.63	1.43	2.10	3.09	1.56	1.91	1.66	4.19	1.66	2.04	1.37
Waterproofing—Trowel—Interior	2.80	1.27	3.84	1.69	2.20	2.71	3.70	1.48	1.60	1.44	3.49	4.00	0.75	3.40	1.88	1.09	1.97	2.48	2.61	1.65	0.99	3.40	0.99	1.15	2.30
Waterproofing—Trowel—Exterior	2.67	1.36	3.66	1.75	3.30	2.18	4.20	1.02	1.55	1.36	2.75	4.07	1.20	3.97	1.07	0.87	1.54	3.05	1.52	2.16	0.82	3.77	1.21	1.72	1.34
Waterproofing—Pressure Gun	4.96	3.94	6.80	2.39	5.70	2.44	5.10	2.88	2.41	2.41	11.10	4.56	1.55	7.90	2.75	1.89	2.92	5.40	2.37	2.54	2.17	4.20	1.55	2.43	2.09
Wrecking	20.72	12.80	28.39	14.61	19.40	18.51	A	13.19	16.00	6.39	18.04	23.11	12.00	26.56	17.69	7.08	13.20	18.20	19.45	11.39	6.50	21.52	10.09	9.93	17.12

*A Specially rated—refer to company. *B Assigned to main classification. *C Special occupational disease loadings apply. *D Subscription to State Fund mandatory: Nevada, Industrial Comm., Carson City, Nev.; Workmen's Compensation Bureau, Bismark, N. Dak; The Industrial Commission of Ohio, Columbus, Ohio; Industrial Accident Commission, Salem, Ore.; Department of Labor and Industry, Olympia, Wash.; State Compensation Commission, Charleston, W. Va.; Workmen's Compensation Dept., State Treasurer's Office, Cheyenne, Wyo.

Fourth Quarterly Round up: ▶ **Building Cost and Price Indexes**

Building Prices Are on the Rise

Contractors' selling prices for buildings are on the rise again.

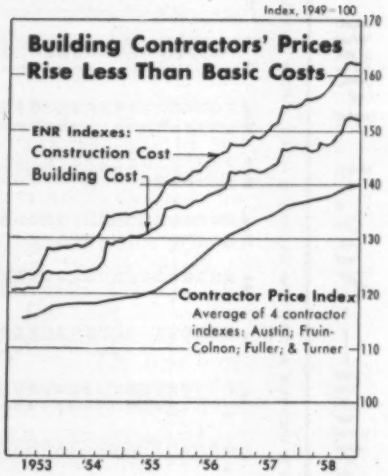
Though the uptrend is slow and not unanimous, it is expected to accelerate next spring when new 1959 labor contracts raise wages.

The rise in selling prices reflects the new cost push (ENR Sept. 18, p. 54) caused by higher prices contractors have to pay for key construction materials, labor and equipment. As in '58, the 1959 rise in contractor prices is expected to proceed more slowly than the rise in the basic costs. The reason: Competition will remain very keen for a slowly expanding volume of new building work available.

The uptrend in contractor prices is evident in the Turner Construction Co. index, which rose in October, and the Fruin-Colnon Contracting Co. index, which edged upward in September. Two other contractor indexes, Austin Co. and George A. Fuller Co., are steady. But all four are at all-time highs.

The pressure of higher costs shows up in the ENR and other weighted cost indexes tabulated below.

Though softer lumber prices caused the ENR Building Cost and Construction Cost Indexes to dip in November, both are near their record highs of October. And all but one of the other weighted cost indexes are at all-time highs.



Exception is the Smith Hinchman and Grylls index, which approximates a selling price index by adding to basic materials and labor costs estimates of contractor overhead, profit and changes in productivity. Though this index is below a year ago, it reversed a decline in August and has held steady since. By contrast, the E. H. Boeckh commercial and factory building cost index increased each month from April to November. It also includes adjustments for estimated contractor overhead, profit and changes in productivity.

The building cost and price indexes reported on this page are updated in each quarterly Construction Cost and Estimating Guide issue of ENR. Previous reports this year were in these issues: March 20; June 19; and September 18.

The 1959 schedule for updating these indexes is: March 17; June 18; September 17; and December 17.

For the historical record and full description of these building cost indexes see ENR's first quarterly Construction Cost and Estimating Guide, ENR March 20, p. 38.

ENR cost indexes for 20 U.S. and two Canadian cities are computed weekly and published in CONSTRUCTION DAILY. These indexes are updated with official monthly values on the Scoreboard page in ENR.

ENR Cost Indexes for 22 Cities, 1913=100

City	Construction Cost Index: Dec '49	Dec '55	Dec '56	1957 Jun	1957 Sep	1957 Dec	1958 Mar	1958 Jun	1958 Sep	1958 Dec	Building Cost Index: Dec '49	Dec '55	Dec '56	1957 Jun	1957 Sep	1957 Dec	1958 Mar	1958 Jun	1958 Sep	1958 Dec
Atlanta	345	495	522	523	550	548	558	558	584	584	313	419	441	442	458	456	456	461	472	472
Baltimore	424	592	602	643	670	670	672	701	708	709	351	472	498	503	518	520	523	527	534	542
Birmingham	377	534	553	556	563	593	593	593	599	619	319	442	455	457	468	476	477	480	488	493
Boston	532	709	747	746	773	765	764	793	809	807	372	487	509	518	531	523	522	528	547	542
Chicago	542	762	790	831	838	836	835	838	857	859	353	489	506	511	530	528	527	535	560	562
Cincinnati	496	671	715	713	751	748	745	746	780	777	362	466	491	489	507	504	501	502	519	515
Cleveland	530	785	819	856	861	859	847	850	874	880	349	489	508	522	527	524	512	515	527	533
Dallas	397	510	534	525	547	547	547	553	573	573	318	426	449	439	451	451	451	459	469	469
Denver	470	653	696	702	710	710	725	725	731	731	359	483	519	510	522	522	523	525	530	532
Detroit	515	772	808	823	832	831	852	852	889	892	351	498	527	535	545	545	545	545	573	574*
Kansas City	511	702	715	735	742	742	742	762	768	768	357	494	503	503	516	516	517	527	533	533
Los Angeles	494	708	731	731	778	778	773	814	822	824	340	479	494	496	508	513	507	514	527	530
Minneapolis	512	720	757	781	788	788	803	818	825	824	363	502	526	530	537	537	537	548	554	553
New Orleans	379	545	564	572	581	591	588	591	602	617	325	449	464	467	477	481	478	477	485	494
New York	539	791	842	852	890	888	910	912	953	940	402	545	569	578	590	591	593	601	622	609
Philadelphia	515	721	747	780	776	775	775	795	803	790	392	535	549	560	562	561	561	569	581	569
Pittsburgh	492	695	727	762	791	788	804	819	827	827	377	506	533	541	566	568	569	573	593	595
St. Louis	522	727	759	789	796	796	814	840	849	844	377	502	525	538	546	546	552	558	567	563
San Francisco	483	684	724	758	763	761	758	798	820	812	345	461	484	486	497	506	503	507	533	533
Seattle	530	685	722	749	756	747	785	789	799	799	341	429	450	456	467	458	466	470	484	484
Montreal	394	550	561	586	587	591	584	603	603	603	314	427	438	451	452	453	446	449	449	449
Toronto	...	544	595	611	608	609	607	605	622	631	...	432	459	469	468	471	470	468	469	472
US Average	480	673	704	721	738	738	744	757	773	774	353	479	500	504	516	516	516	521	535	535

Building Cost & Price Indexes, 1913=100

Year and Month	Weighted Cost Indexes: ENR Construction	ENR Building	American Appraisal Company	Assoc. Gen'l Contractors	Marshall & Stevens	E. H. Boeckh: Comm'l & Factory Bldg *†	Smith Hinchman & Grylls #†	ICC Railroad: station & office **	Contractor Selling Price Indexes: Austin #	Fruin-Colnon	Fuller	Turner ***
1913	100	100	100	100	100	100	100	...	100	100	100	100
1926	208	185	217	197	185	181	185	184	185	218	202	195
1932	157	141	155	171	130	144	128	141	117	178	157	136
1939	236	197	200	188	183	191	199	166	152	208	195	182
1946	346	262	322	257	288	275	319	291	273	285	290	318
1949	477	352	490	342	365	369	395	368	307	382	382	413
1956	692	491	635	462	503	489	544	480	400	503	482	544
1957 av	**724**	**509**	**663**	**483**	**515**	**507**	**568**	**500**	**420**	**512**	**504**	**576**
Oct	737	517	672	490	...	512	574	...	...	514	513	580
Nov	737	517	672	491	...	512	572	...	...	514	...	...
Dec	738	516	672	490	523.5	512	572	...	426	514	...	...
1958:												
Jan	743	517	673	493	...	513	574	...	...	517	519	580
Feb	744	516	673	493	...	512	572	...	...	517	...	...
Mar	744	516	674	493	524	511	570	...	426	517	...	...
Apr	746	517	675	494	...	512	572	...	...	518	521	573
May	752	519	677	498	...	513	564	...	...	531	...	...
Jun	757	521	680	498	523	517	561	...	427	531	...	...
Jul	763	524	681	502	...	519	561	...	...	537	531	573
Aug	764	526	683	503	...	520	562	...	...	537	...	...
Sep	773	535	690	504	530	521	562	...	427	538	...	...
Oct	775	537	691	504	...	523	562	...	...	538	531	580
Nov	774	535	691	504	...	523	562	...	...	538	...	...
Dec	774	535	...	...	...	...	...	...	...	...	...	...

For historical record and description of what these indexes cover, see ENR March 20, 1958, pp. 38, 39
† Includes overhead, profit and adjustment for estimated changes in productivity * Reported on 1926–29 = 100 base
** Index reported on 1910–14 = 100 base # Index reported on 1926 = 100 base *** Index reported on 1939 = 100 base

Monthly Index History

Historical record of ENR cost indexes, graphs and tables is in the supplement to Engineering News-Record, October 17, 1957 by Business News Department, Engineering News-Record, P. O. Box 89, Times Square Station, New York 36, N. Y. Reprints are available at $1.00 each.

How much could be sliced off the cost of your workmen's compensation?

It's a known fact that, in the construction industry, Workmen's Compensation rates run from 2% to as high as 30% of payroll. That's why so many cost-conscious contractors turn to American Mutual to save dollars on their workmen's compensation—and here's how they do it!

First, all American Mutual policyholders get their insurance protection at low net cost because they're with a mutual company—American Mutual policyholders saved nearly $9,000,000 in dividends received in 1957 alone. Then each policyholder has the advantages of American Mutual's specialized loss-control services that help them reduce accidents to a minimum . . . resulting in lower insurance costs. Third, claims are handled promptly and expertly. What's more, trained and experienced American Mutual sales representatives help them to avoid costly loopholes or overlap in the insurance coverage.

Year after year, contractors find that these benefits of carrying Workmen's Compensation with American Mutual not only add dollars to their operating profits but provide advantages in bidding for the next job. See your *friendly* AM *man* who'll gladly explain how you can do the same. American Mutual, Dept. EN-7, Wakefield, Massachusetts.

American Mutual

LIABILITY INSURANCE COMPANY

Your friendly AM man can advise you on all your liability insurance needs

A leading writer of Workmen's Compensation, all forms of Liability, Crime, Accident and Health Insurance

How to cut job delays that rob scraper production

Moving dirt in the competitive situation today calls for a high degree of operating efficiency. A well-run scraper spread can load-out up to *twice* as much earth as an identical spread that is hampered by an accumulation of "minor" delays. There are many ways of correcting an unbalanced fleet to eliminate waiting time. To help you keep your scrapers and pushers moving at a uniform rate for highest production, here are some helpful suggestions.

One of the most serious lost-time problems is in waiting time of pushers or scrapers in the cut.

IF pushers are waiting

1. It seems only good sense to have on every job several small, high-speed scrapers in the 7 to 9-yard "handyman" class. With such scrapers available, you can pull one or more in to balance your production fleet whenever pushers are waiting for scrapers. When the balance swings the other way and scrapers are waiting, chase your small units out on odd-lot dirt-moving. They are money savers for small-yardage cuts where they can profitably self-load, such as: light production cuts; removing and stockpiling topsoil; building access roads, detours, drainage; or for haul-road improvement, where they can spread gravel, fill muddy low spots, etc.

2. Check to see if you can shorten the haul by concentrating dumping on the near-end of the fill.

3. Study haul and return. Are your operators "dogging"... is haul-road smooth, properly drained, properly surfaced for fast travel? Operators automatically slow down on rough roads to protect their machines and their own bottoms. Would it help to get your graders in to improve haul-road and get more speed? If there is a one-way stretch where scrapers are delayed, maybe you need to two-lane it or build a midway pass-around?

4. When pushers are waiting, it's a good time to put an extra yard or two on each load with a longer push cycle. Also, if you have modern high-speed pushers, be sure they push through to give the prime-mover a running start into hauling-gear.

5. Couple your pusher to a ripper and plow-up cut for easier loading, by changing your push-back-push cycle to an oval with end turn-arounds. This productively utilizes your pusher waiting-time, speeds up loading cycles, gets you bigger payloads.

6. If pusher is equipped with dozer blade, use wait time to clear boulders, stumps and roots from cut areas. This will speed loading cycles later on.

7. Use pusher waiting time to improve cut and haul-road drainage (especially if you have modern, high-speed, dozer-blade equipped pushers that can handle hit-and-run jobs).

8. If your unbalance is caused by a scraper being down for repairs or service, check your preventive maintenance program and try harder for elimination of work interruptions.

9. If your scrapers are getting slow cycles due to wet footing, improve drainage with your grader, and remember next time to provide good working drainage for the cuts ahead *before the rains come*. Also remember to incorporate side drainage in cuts and fills by keeping drainage areas at the side low, and by leaving a crowned center area until you get to finished grade stage.

IF scrapers are waiting

1. Load a little on the light side, don't take the extra seconds it takes to get that last yard up on the heap. Don't let pusher take time to boost the scraper-unit up to hauling-gear speed after completing load.

2. Dump your scrapers at the far end of the dump area. Possibly you can shift one or two scrapers for an extra long haul operation.

3. Have scrapers partially self-load with a light cut as they make their incoming pass through the cut area.

4. Step-load your machines in long cut areas to save pusher time.

5. Pull in an extra pusher if you have any high-speed, rubber-tired tractors available. Even a heavy-duty

grader in the 150 to 190 hp class can do an acceptable push-loading job on the modern, 18-yard scrapers with easy-loading Fullpak® scrapers. Incidentally, your graders should be equipped with utility dozer blades. These improved big graders can move in at speeds to 27 mph.

6. Consider purchase of one or more high-speed dozer-pusher units for utility traveling-man service over your entire work-area. With speeds of around 17 mph, one of these units can easily be pulled in from pioneering, finishing, or utility work to step-up production of your scraper fleet whenever needed.

General suggestions on unbalance

1. Operators, being human, tend to bunch-up in the borrow pit. Try to speed-up the laggards and slow down the hot-rod drivers. An across-the-fleet bonus for increasing pay-yard production can be a very sound investment. But make your "pay-off" on teamwork basis . . . not on individual competition.

2. Scheduling a swing-shift crew for servicing and refueling of your equipment can give you an added ½ hour of production for each scraper during the course of the day. A service truck can easily handle urgent calls for fuel, grease or field adjustments during the lunch time break.

3. A bonus to operators for no down-time on a week or monthly basis can pay-off if accompanied by an educational program on preventive maintenance.

4. If you have a temporarily unbalanced fleet involving waiting line-up of scrapers, get your scraper operators to slow down a bit on haul and return. Sure, it's only natural for them to high-ball and get a five for a smoke and a chat as they sit and wait. But the high-balling costs you fuel, tire wear and higher maintenance. If it results in extra pay-yards for profit, that's swell. But, if it just gives the boys a chance to sit with idling engines, slow them down with an "easy does it".

5. Ripping and scarifying hard loading material pays off in faster loading. On some jobs, it is possible to reduce loading time from 3 minutes to ½ minute by loosening the soil. Clearing boulders and stumps from cut areas will help speed loading and also reduce equipment delays needed for repairs.

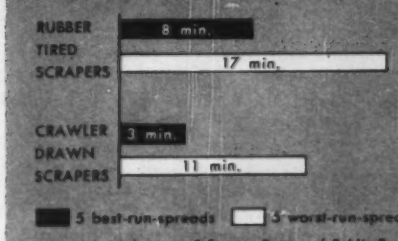
6. Travel speed throughout the cycle is a major factor affecting scraper output. Spongy, slippery, rock-strewn, or just rough and rutted haul-roads can cut your scraper's speed in half. Haul-roads properly graded and drained by modern motor graders permit maximum speeds, increase safety, and reduce costly equipment repairs.

Want to talk it over with your foreman?

If you do, we'll gladly send you reprints of this advertisement without charge. Just tell us how many copies you want. There is also a valuable 60-page booklet prepared by our field engineers called "Earthmoving — An Art and a Science". Ask for that too, if you need extra copies. Write . . .

Minutes you can save per hour by increasing job efficiency

Chart* shows number of minutes per hour that can be saved by correcting delays. Because of their slower speeds, crawlers cannot capitalize on savings like rubber-tired equipment.



* Source: Bureau of Public Roads.

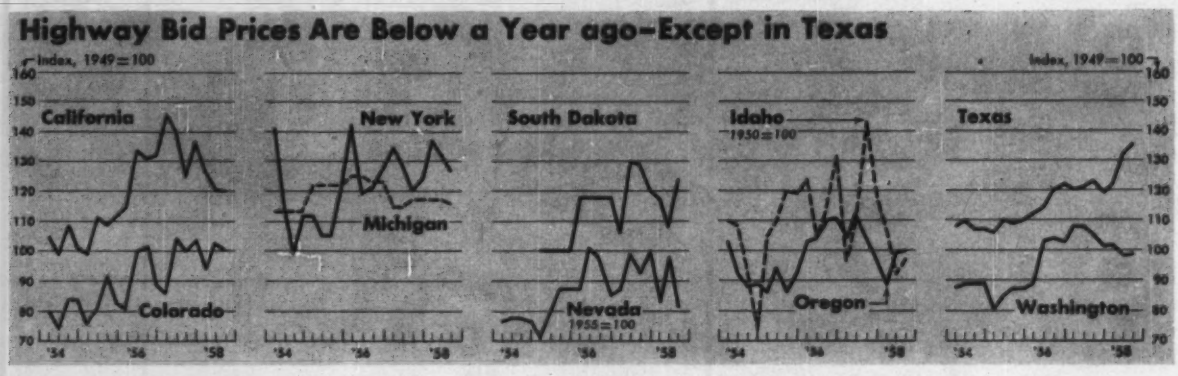
Ripping and scarifying hard loading material pays off in faster loading. On some jobs, it is possible to reduce loading time from 3 minutes to ½ minute by loosening the soil. Clearing boulders, stumps, and roots from cut areas will often help speed loading and also reduce need for equipment delays for repairs.

Travel speed throughout the cycle is a major factor affecting scraper output. Spongy, slippery, rock-strewn, or just rough and rutted haul-roads can cut your scraper's speed in half. Haul-roads properly graded and drained by modern motor graders permit maximum speeds, increase safety, and reduce costly equipment repairs. P-1637-DC-2

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



Heavy Construction Bids Turn Lower in '58

Heavy construction contractors are in a taut competitive race for new work this year. To win contracts, they are using their most effective weapon: bid prices.

Third quarter bid prices were below a year ago in nine of eleven states reporting to ENR. And the Bureau of Public Roads U.S. Composite Mile Price Index for federal-aid highways was 2.5% under a year ago (see charts above and table below).

Despite substantial increases in wages and steel costs, bid prices declined in the third quarter in five states. The BPR index was also down. However, prices firmed up in five states.

Only Texas and Kentucky report '58 highway bids higher than '57. Prices on Texas highways in the third quarter were 9.7% higher than a year earlier. Kentucky estimates its index at 132, based on 1946 = 100, in the first nine months of '58. That's 4% above 1957.

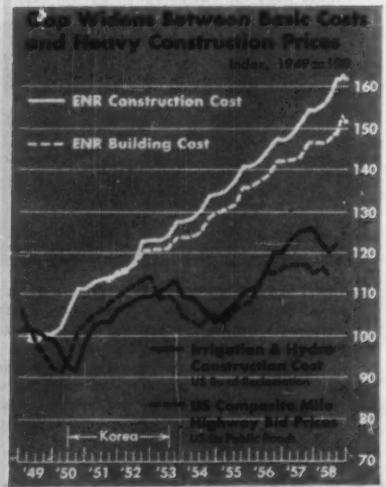
Also down are irrigation and hydro construction costs in 17 western states and Alaska. The Denver office, U.S. Bureau of Reclamation reports a drop early this year. A trend reversal in October recouped only part of the decline.

Highway Price Indexes in 10 States and the US

Reported by state highway departments — US Bureau of Public Roads Indexes, 1925-29=100

Base Year=100:	California 1940	Colorado 1949	Idaho 1950	Michigan 1940	Nevada 1955	New York 1940	Oregon 1940	South Dakota 1940	Texas '49–'53	Washington 1940	Excavation[1] 17,491* cy Price $0.35†	Excavation[1] 17,491* cy Index 100.0	Surfacing[2] 3,726* sy Price $2.22†	Surfacing[2] 3,726* sy Index 100.0	Structures: Reinf. steel 16,000* lb Price $0.052†	Structures: Struct. steel 4,325* lb Price $0.067†	Structures: Struct. concr. 68* cy Price $22.15†	Structures: Combined Index 100.0	Composite Mile Index 100.0	ENR Construction Cost Index 100.0
1956 Av	247.3	92.8	118.3	185.4	118.2	252.2	193.8	198.8	105.0	214.1	0.38	108.2	3.89	175.5	0.131	0.202	54.33	253.8	163.3	334.6
1957 Av	264.3	97.3	116.1	173.0	124.3	268.5	187.8	205.6	108.2	226.4	0.40	113.5	4.02	181.2	0.137	0.218	56.92	267.0	170.0	349.8
Q1	277.7	86.4	95.9	H1:	105.5	273.4	187.7	189.0	107.4	231.4	0.39	111.7	4.01	180.8	0.141	0.215	57.46	270.6	169.7	342.4#
Q2	266.9	105.4	109.0	171.6	130.4	261.7	202.0	213.7	108.3	232.2	0.40	113.4	4.00	180.3	0.137	0.221	57.35	268.7	169.8	348.6#
Q3	237.5	100.0	143.4	H2:	128.7	258.3	188.0	200.0	110.1	225.1	0.40	112.5	4.02	181.3	0.135	0.225	57.48	268.3	169.9	356.5#
Q4	262.1	103.5	116.2	174.3	119.8	251.1	173.4	390.4	106.9	216.7	0.41	116.5	4.04	182.2	0.135	0.210	55.40	260.4	170.6	356.7#
1958:																				
Q1	241.8	93.7	105.8	H1:	117.2	277.1	159.3	179.6	109.2	217.7	0.39	110.3	4.02	181.3	0.131	0.201	54.99	255.6	167.1	359.7#
Q2	231.0	102.5	92.1	175.0	108.0	266.8	180.0	213.5	118.3	210.1	0.40	114.5	4.03	181.7	0.130	0.192	54.85	252.9	168.5	365.9#
Q3	228.5	99.9	97.0	172.7	124.2	257.5	181.1	175.9	120.8	211.0	0.39	111.4	3.97	179.0	0.130	0.186	54.55	251.1	165.7	373.7#

*[1] Common excavation plus other expressed as equivalent common excav. *[2] Portland cement concrete plus other expressed as equivalent port. cem. concr. *** Fixed quantities used for establishing price trend *† Prices for base year index. *# Last month of quarter * Based on 1925-29=100


Gap Widens Between Basic Costs and Heavy Construction Prices
Index, 1949=100
ENR Construction Cost
ENR Building Cost
Irrigation & Hydro Construction Cost
US Composite Mile Highway Bid Prices
Korea
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58

Irrigation and Hydro Cost Indexes

US Bu Reclamation, Denver Office, Indexes, 1949-51 = 1.0

Class of Construction	July 1940	October 1948	October 1949	October 1956	1957 Jan.	1957 Apr.	1957 July	1957 Oct.	1958 Jan.	1958 Apr.	1958 Jul.	1958 Oct.
Composite index	0.47	0.84	1.02	1.24	1.24	1.27	1.29	1.30	1.30	1.28	1.24	1.29
Dams, earth	0.51	0.98	1.05	1.17	1.15	1.19	1.22	1.22	1.23	1.17	1.10	1.10
Dams, concrete	0.47	0.81	1.02	1.12	1.11	1.14	1.15	1.16	1.16	1.14	1.12	1.12
Pumping plants, bldg & equip	0.48	0.76	0.97	1.43	1.43	1.45	1.46	1.46	1.46	1.41	1.42	1.46
struct, reinf conc, & improv	0.44	0.75	1.00	1.31	1.31	1.32	1.34	1.35	1.36	1.30	1.32	1.33
equipment	0.55	0.77	0.94	1.56	1.56	1.58	1.58	1.58	1.58	1.59	1.60	1.63
pumps & prime equip			0.94	1.64	1.64	1.66	1.66	1.66	1.66	1.67	1.68	1.71
access elec & misc equip			0.97	1.41	1.41	1.43	1.44	1.44	1.44	1.44	1.45	1.49
steel penstocks, disch pipes		0.69	0.94	1.66	1.66	1.68	1.72	1.72	1.72	1.66	1.63	1.69
Canals	0.47	0.86	1.02	1.18	1.18	1.20	1.21	1.21	1.19	1.12	1.13	1.13
Conduits, tunnels, free flow, concrete lined		0.82	0.97	1.24	1.24	1.26	1.29	1.30	1.30	1.25	1.28	1.29
Laterals and drains	0.41	0.76	1.01	1.26	1.26	1.31	1.32	1.35	1.32	1.26	1.27	1.30
Primary roads	0.48	0.82	1.06	1.19	1.19	1.23	1.25	1.25	1.24	1.22	1.21	1.23
Secondary roads, unsurfaced	0.50	0.86	1.08	1.11	1.13	1.18	1.21	1.20	1.19	1.18	1.18	1.19
Bridges, steel	0.46	0.85	1.01	1.47	1.47	1.48	1.52	1.52	1.52	1.46	1.44	1.47
Power plants, hydro, bldg & equip	0.51	0.78	0.96	1.44	1.44	1.46	1.47	1.47	1.48	1.42	1.44	1.49
struct, reinf conc, & improv	0.45	0.78	1.01	1.30	1.30	1.31	1.33	1.34	1.36	1.30	1.33	1.34
equipment	0.55	0.78	0.93	1.53	1.53	1.55	1.55	1.55	1.54	1.55	1.58	1.60
turbines & generators	0.56	0.80	0.94	1.57	1.57	1.58	1.58	1.58	1.58	1.59	1.60	1.62
access elec equip	0.54	0.73	0.92	1.44	1.44	1.46	1.48	1.48	1.48	1.48	1.49	1.52
misc equip	0.51	0.73	0.95	1.43	1.43	1.44	1.44	1.44	1.40	1.40	1.40	1.44
Concrete pipe lines	0.55						1.28		1.29	1.28	1.32	1.32
Transm switchyards & substa	0.54	0.76	0.94	1.59	1.59	1.60	1.60	1.61	1.60	1.58	1.56	1.60
Transm lines, wood pole 115 kv	0.52	0.99	1.11	1.11	1.09	1.09	1.10	1.13	1.16	1.18	1.21	1.23
Transm lines, steel tower 230 kv				1.39	1.37	1.39	1.43	1.43	1.43	1.42	1.40	1.44
Permanent genl property, bldgs	0.44	0.68	0.93	1.30	1.30	1.30	1.31	1.31	1.30	1.30	1.32	1.33

Based on combined costs of material and labor furnished by the contractor, and material and labor furnished by the government on US bureau of Reclamation projects in 17 western states and Alaska

Want to make an extra $70 per day ...per scraper?

Bigger graders can speed-up your big-yardage dirtmoving

The saving of just a few seconds on your dirtmoving cycle is mighty important... especially on your big-yardage jobs. For example, say you're working scrapers that haul 20 pay-yards, and each moves 100 loads per 10-hr. day. That's an average cycle of 6 minutes. When you shave just 33 seconds off this average cycle, you get 10% more output, or 110 payloads per scraper each day.

Those 10 extra loads give you 200 *bonus* pay-yards, at no extra cost. Even with dirt at the minimum bid price of 35¢ per yard, that's an extra $70.00 a day in the profit column for *each scraper* you use!

Here's how you get it

Your scrapers always work faster when haul roads are kept smooth, and job is well drained. They move more loads when fills are firm and graded... when borrows are kept bladed for easier loading.

For most profitable big-yardage dirtmoving you need graders that can keep pace with your big scraper fleet. You need big, heavy, 160 hp or larger graders to help you save valuable seconds on each dirtmoving cycle... to help you move more 20-yd. loads per hour.

On the fill, your bigger grader spreads a full 12′ or 14′ blade-load of dirt at speeds to 7.5 mph... quickly grades for speedy compaction... levels footing for on-the-run dumping of next lift. In the cut, it smooths-out ruts and bumps... scarifies tough spots... blades down heavy side banks... casts out ditch-bank corner material... maintains drainage for extra days production during rainy seasons.

With its extra weight and power, your 160+ hp grader handles all jobs fast. It stays ahead on production, so whenever needed, it can smooth haul roads to keep your dirtmovers "highballing". Working faster, blading more yardage, your bigger graders smooth the way for faster earthmoving at every point in the cycle... for bigger output and extra earnings from every scraper on your job. They also cut accurately, to speed-up your finishing, get you off the current job, ready for the next one faster. And they help you get your final settlement quicker.

Fewer machines... lower cost

To do the same amount of work with ordinary 115 hp graders, you need MORE MACHINES... MORE MANPOWER... MORE TIME. And extra graders slow-down your dirtmovers and compactors.

You'll get more work done faster — less congestion — with Adams* 160 hp or 190 hp Model 660 graders. And you'll get it done at lower cost. These heavy-duty LeTourneau-Westinghouse graders give you the extra power, weight, and speed you need, to handle your future big-volume contracts faster. They'll give you up to 30% more output for only about 8% increase in ownership and operating costs.

Two extra-output models

Adams 660 is available with 2 power and drive options: (1) 160 hp GM or Cummins engine, constant-mesh transmission with 8 speeds forward (to 26.0 mph), 4 reverse (to 13.7 mph), plus 3 optional creeper speeds; or (2) POWER-*Flow** 660 with 190 hp GM or Cummins engine, torque converter, 4 speed ranges forward, 0.0 to 27.4 mph. Call or write for an immediate demonstration.

*Trademark G-1561-DC-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate Ready mixed Concrete, Asphalt: Last, Dec. 4; Next, Jan. 8.
- Iron and Steel Products, pipe: Last, Dec. 11; Next, Jan. 15.
- Wood Products, Glass, Explosives, Chemicals: Last, Dec. 18; Next, Jan. 22.
- Wage Rates, Building Board, Lath, Insulation: Last, Nov. 27; Next, Jan. 29.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor: Building	Common Labor: Heavy Cons	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$3.75	$3.05	$3.30+7½[d]	$3.225	$3.125	$3.50+10[d]	$3.35+25[d]	$1.70	$1.70	$1.70	$1.80	$2.05
Baltimore	3.95+10[d]	3.20+7½[d]	3.80/3.95+10[d,Q]	3.60+7½[d]	3.425+7½[d]	3.30+7½[d]	2.05+7½[d]	2.05+7½[d]	2.00+7½[d]	2.00+7½[d]	2.10+7½[HH]	
Birmingham	3.85	2.95	3.35+10[f,K]	2.77[r]	3.17	3.425	3.40+10[K]	1.75	1.85	1.83	2.02[FF]	2.35[GG]
Boston	3.80+20[m]	3.40+10[d]	3.90+20[m]	3.77½+10[bf]	3.65+35[g]	3.70+12[g]	3.20+10[d]	2.55+7[d]	2.60+7[d]	2.395[c]	2.45[hh]	2.65[hh]
Chicago	3.87½+7½[c]	3.65+20[m]	4.00+18[c]	3.55+5[c]	3.70+23[c]	3.90+12[c]	3.75+22[m,n]	2.77½+7½[c]	2.77½+7½[c]	2.36+15[c,nnn]	.....	.....
Cincinnati	3.85	3.57½	3.60+10[d]	3.375/3.60	3.62½	3.82+4[N]	3.80+9½[c]	2.62½	2.525	2.45+2½[LL]	2.55+2½[LL]	2.65+2½[LL]
Cleveland	3.805+10[c]	3.83	3.73+10[d]	3.83	3.83	3.855	3.64+10[m]	3.10	3.005	2.75+10[nn]	2.75+10[nn]	2.75+10[nn]
Dallas	3.875	3.175	3.30+7½[c]	3.225	3.625+13[nn]	3.375+7½[c]	3.375+9½[gh]	1.70	1.70	1.70	1.70	1.70/2.625[pp]
Denver	3.75	3.34	3.175+7½[d]	3.05	3.475+12½[hh]	3.60+14[d]	3.55+10[d]	2.17	2.17	2.30	2.40	2.55
Detroit	3.77+3½[ff]	3.40+40[c]	3.75+22½[F]	3.47+25[c]	3.66+34[c,ii]	3.85+35½[C]	3.73½+14[B]	2.65+33[c]	2.80+10[c]	2.80	2.80	2.80
Kansas City	3.85	3.325	3.40	3.345	3.625	3.60+28[jj]	3.60+12[nn]	2.355	2.405	2.33[rr]	2.33[rr]	2.405[rr]
Los Angeles	3.85+10[hh]	3.375+10[d]	3.85+20½[kk]	3.41+10[d]	4.00+30[ii]	4.15[j]	3.80+38½[f]	2.68+10[d]	2.68+10[d]	2.83+10[d]	2.83+10[d]	3.01+10[d]
Minneapolis	3.725	3.30	3.47	3.30	3.40+23[gg]	3.38+36[m]	3.42+20[m]	2.55	2.55	2.55	2.55[s]	2.70[c]
New Orleans	3.525+5[c]	3.00	3.30+7½[c]	3.125+7½[c]	3.12+5[c]	4.475+7½[c]	3.40+15[c]	1.75	1.75	2.475+7½[d]	2.475+7½[d]	2.475+7½[d]
New York	4.45+38[ll,v]	4.10+33½[kj]	4.30+36[ll,v]	4.35+35[hh,ll]	4.35+52[A]	3.90+51[ll,v]	4.30+47[ll,L]	3.00+24[ll,T]	3.00+24[ll,T]	2.21+22½[CC]	3.025+23½[gg,ll]	3.025+23½[gg,ll]
Philadelphia	4.00+17[c]	3.635	4.23+17½[kM]	2.595/4.23	4.05+15[c]	4.07½+16[w]	4.10+16½[c]	2.35	2.65	——2.315/2.45+15½[ss]——		
Pittsburgh	4.20+20[m]	3.675+10[c]	4.00+20[m]	3.64+10[d]	3.825+20[m]	4.35+32½[d]	4.00+20[m]	2.45+20[m]	2.30+20[m]	2.37+20[m]	2.51+20[m]	2.61+20[m]
St. Louis	3.90+31[c]	3.575+10[c]	3.60+7½[c]	3.675[r]	3.80+7½[c]	3.97½+29.8[cd]	3.92½+27½[c]	2.625+10[c]	2.652+10[c]	2.65+7½[d,ss]	2.70+7½[d]	2.70+7½[d]
San Francisco	3.95+52½[dd,ll]	3.30+32½[m,ll]	3.85+20[m]	3.405+10[c]	3.74+52½[w]	3.91+34½[C]	3.70+46[K]	2.685+10[c]	2.685+10[c]	2.81+10[nn]	2.75+10[nn]	2.89+10[nn]
Seattle	3.90+10[c,d]	3.13+10[c,d]	3.40+10[c,d]	3.29+20[m]	3.40+10[c,d]	3.65+26[X]	3.70+23[C]	2.70+10[c,d]	2.70+10[c,d]	2.87+17½[cc,nnn]	2.87+17½[cc,nnn]	3.07+17½[cc,nnn]
Montreal	2.20+5[c,ii]	2.10+5[c,ii]	2.25+5[c,ii]	2.00+5[c,ii]	2.35+5[c,ii]	2.20+5[c,ii]	2.32+5[c,ii]	1.50+3[c,ii]	1.50+3[c,ii]	1.75+7[c]	1.75+7[c]	1.75+7[c]
Toronto	2.95+12[c]	2.65+11[c]	2.55+10[c]	2.75+11[c]	2.80+19[c,ii]	3.00+12[c]	2.79+17[c,ii]	1.70+7[c]	1.70+7[c]	1.75+7[c]	1.75+7[c]	1.75+7[c]

	Tractor Operators—Incl. bulldozers: 34–49 hp	70–100 hp	100 & over	Tractor scraper 15–16 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$2.70	$2.85	$2.85	$2.70	$3.225	$3.375	$2.70	$2.625	$1.82
Baltimore	3.40/3.55+10[d,o]	3.40/3.55+10[d,o]	3.40/3.55+10[d,o]	3.40/3.55+10[d,o]	3.80/3.95+10[d,o]	3.80/3.95+10[d,o]	3.40/3.55+10[d,o]	2.85/3.00+10[d,o]	2.10+7½[d]
Birmingham	2.79	2.79	2.79	2.93	2.93	2.93	2.89	2.52	1.90
Boston	3.40+10[d,o]	3.40+10[d,o]	3.40+10[d,o]	3.40+10[d,o]	3.775+10[d]	3.775+10[d]	3.40+10[d]	3.325+10[d]	2.60+7[d,hh]
Chicago	3.30+5[d]	3.45+5[d]	3.20+5[d]	3.00+5[d]	3.90+5[d]	3.90+5[d]	3.25+5[d]	3.10+5[d]	.....
Cincinnati	3.375	3.375	3.375	3.375	3.375	3.60	3.60	3.60	3.60
Cleveland	3.58	3.58	3.58	3.58	3.83	3.83	3.58	3.455	3.455
Dallas	1.70/2.625[pp]	1.70/2.625[pp]	1.70/2.625[pp]	1.70/2.625[pp]	1.70/2.625[pp]	1.70/2.625[pp]	1.70/2.625[pp]	1.70/2.625[pp]	1.775/2.00[pp]
Denver	2.30	2.90	2.90	2.90	3.05	3.05	2.90	2.90	2.45
Detroit	3.50+10[d]	3.50+10[d]	3.50+10[d]	3.50+10[d]	3.50+10[d]	3.50+10[d]	3.50+10[d]	3.195+10[d]	2.78+25[KK]
Kansas City	2.65	3.10[c]	3.10[c]	3.10[c]	3.345	3.345	3.10	3.345[ww]	2.45
Los Angeles	3.71+10[d]	3.71+10[d]	3.71+10[d]	3.81+10[d]	3.81+10[d]	3.81+10[d]	3.81+10[d]	1.93+10[d]	2.89+10[d]
Minneapolis	2.93	3.15[c]	.....	3.15	3.37[s]	3.63[s]	2.93	2.82	2.70
New Orleans	3.125+7½[d]	3.125+7½[d]	3.125+7½[d]	3.125+7½[d]	3.125+7½[d]	3.125+7½[d]	3.125+7½[d]	2.475+7½[d]	1.85
New York	3.725+30[ll,v]	3.725+30[ll,v]	3.725+30[ll,v]	3.85+31[ll,v]	4.60+37[ll,v]	4.60+37[ll,v]	3.85+31[ll,v,ww]	3.85+31[ll,v,ww]	3.45+28[MM]
Philadelphia	——2.595/4.23+10[d]——			2.595/4.23+10[d]	——2.595/423+10[d]——		2.595/4.23+10[d]	2.595/4.23+10[d]	2.35+15[d]
Pittsburgh	3.44+10[d]	3.44+10[d]	3.44+10[d]	3.44+10[d]	3.64+10[d]	3.64+10[d]	3.64+10[d]	3.15+10[d]	2.30+20[m]
St. Louis	3.675[t]	3.675[t]	3.675[t]	3.675[t]	3.675[t]	3.675[t]	3.675[t]	3.125[t]	3.125[t]
San Francisco	3.70+10[nn]	3.70+10[nn]	3.70+10[nn]	3.70+10[nn]	3.85+10[nn]	3.85+10[nn]	3.75+10[nn]	3.10+10[nn]	2.955+10[nn]
Seattle	3.26+20[m]	3.26+20[m]	3.26+20[m]	3.26+20[m]	3.63+20[m]	3.63+20[m]	3.35+20[m]	2.90+20[m]	2.90+10[d]
Montreal	1.70+4[d,ll]	1.93+4[d,ll]	1.93+4[d,ll]	1.93+4[d,ll]	2.19+5[d]	2.19+5[d]	1.93+4[d,ll]	1.80+4[d,ll]	1.80+4[d,ll]
Toronto	2.25+9[c]	2.25+9[c]	2.25+9[c]	2.25+9[c]	2.75+11[c]	2.75+11[c]	2.25+9[c]	2.30+9[c]	2.30+9[c]

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.764, ENR Common Average $2.482
R: revised.

[a] 6 hr day. [b] 7 hr day. [c] 5% vac. stamp fund plus 12¢ WF for bricklayers; 4% VF for electricians plus 10¢ WF, 1% PF. [d] H & WF. [e] 10¢ H & W, 10¢ VF. [f] 10¢ H & W, 7½¢ VF. [g] 2¢ Ed, 7½¢ H & W. [h] 7½¢ WF, 1¢ AF [i] WF. [j] Inc. 4% VF; 1% PF pd by employer. [k] 10¢ WF, 10¢ VP, 5¢ HP. [l] 4% VF. [m] 10¢ WF, 10¢ PF. [n] 7% V & Hol., 3% H & W, 1% PF. [o] lower rates, straight time; other broken. [p] 3% WF, 3% PF+10¢ in lieu of pd. hol. [q] 10¢ WF, 6% V & H, 3% PF. [r] 4% WF, 20¢ PF. [s] 5% W & PF, 4% VF, 1% NC 1% JI, plus 6 PH. [t] Inc. 10¢ WF. [u] 10¢ WF, 1% PF, ½% apprent. [v] 1 drum; 2 drums, 2.93. [w] 20¢ VF, 17½¢ PF, 3¢ Prom., 12¢ W. [x] VF. [y] 2-axle, 10 wh. 3-axle $2.45; Euclid $2.65. [z] 10¢ WF, 3% HP, 15¢ V & H. [A] 15¢ WF, 15¢ PF, 20¢ BF. [B] 7½¢ VP, 5¢ PF, 1½¢ Ed. F. [C] 10¢ H & W & ins., 7% V & H. [D] 4% VF, 10% WF, 1% PF. [E] 20¢ WF, 30¢ VF. [F] Plus $4 per day annuity contrib. [G] 10¢ WF, 10¢ VF, 3¢ prom. [H] 10¢ WF, 10¢ VP, 3% PF, 2% PH. [I] 8¢ H & WF, 5¢ advtg. [J] 8% WF, 6 PH, 3% PF. [K] 7½¢ WF, 2½¢ AF. [L] 3% WF, 3% PF, 3% VF, 1% Ed. F. [M] 10½¢ WF, 7½¢ PF. [N] 1% PF. [O] 10¢ WF, 1% NECA, 4¢ AF, 10¢ VF. [P] 10¢ H Ins., 7½¢ PF, 5¢ VF. [Q] 2 drums; 1 drum $3.10/3.25+10¢ WF. [R] 10¢ H & WF, 2¢ admin. 1¢ apprent. [S] 8¢ H & WF, 7¢ PF. [T] H & W, VF. [U] 10¢ WF, 4% VF, 1% PF, 5¢ Ind. F. [V] 4% WF, 4% PF. [W] 7½¢ WF, 1½¢ Ed. F. [X] 7½¢ WF, 15¢ VF, 3½¢ PF. [Y] 10¢ H & W, 9¢ PF. [Z] intermediate. [aa] 7¢ WF, 15. PF. [bb] highway bld contr.; $3.325+10¢ WF. [cc] less than 2-T. [dd] 17½¢ WF, 20¢ PF, 10¢ PH, 5¢ Jt Bd. [ee] up to 6 cy. [ff] 10¢ H & W, 5¢ PF. [gg] 6–8 cy. [hh] 7½¢ H & WF, 5¢ indus. prom. [ii] 4% WF, 4% PF, 6 PH. [jj] 2% VF. [kk] 10¢ HW, 10¢ P, ½¢ AF. [ll] 10¢ HW, 10¢ PF, 5¢ Trust F, 5¢ Trade Prom. [mm] 10¢ W, 20¢ 2½¢ Gen. Ben. [nn] 10¢ VF, 2¢ EF. [oo] 10¢ WF, 3¢ EF. [pp] higher rates are union, other taken from min. wage approved by County Comm. Court. [qq] flatbed. [rr] under 10 cy. [ss] over 10 cy. [tt] VF. [uu] single. [xx] 7½¢ H&W, 8¢ PF. [yy] 7½¢ H&W, 10¢ PF. [BB] 3% WF, 2% PF. [CC] 11¢ WF, 11½¢ PF, 11 PH. [FF] 1½ to 3 T. [GG] up to 5 t; over 5 T $2.22. [HH] 8¢ H&W, 2½¢ PF. [JJ] Incl. 2% VF. [KK] 10¢ H&W, 10¢ PF, 5¢ VP. [LL] plus $2.25 wk WF. [MM] 3% WF, 6 PH.

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 18" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION loose, per 40-lb bag a	3" batts per M sf a	GLASS FIBER INSULATION loose, per 40-lb bag	3" batts per M sf	ALUMINUM FOIL 60# Kraft Expansible 1 side foil per roll of 250 s. f.	Blanket 2 layers foil per Msq. ft
Atlanta	$70.00	$80.00	$43.50	$70.00	$70.00	$127.00	$70.00	$1.59[s]	$80.00	$2.00[b]	$75.00	.....	.....
Baltimore	81.70[f]	45.55[f]	34.25[f]	55.25[f]	65.00[f]	108.80[f]	69.00[f]	1.30	66.50	1.50	45.00	$4.00[g]	$33.50
Birmingham	68.90	87.00	47.77	75.00	65.00	126.50	81.00	1.40	70.00	1.80	75.00	3.12[g]	.....
Boston	60.00[m]	50.00[m]	36.00[m]	60.00[m]	65.00[m]	120.00[m]	79.00[kn]	1.45[b]	75.00	.....	65.00	5.30	53.50[g]
Chicago	67.00	84.00	45.00	62.00	67.00	123.00	67.00	1.85	80.00	.....	63/65[t]	5.25[g]	.....
Cincinnati	48.00[w]	42.85[w]	32.05[w]	51.16[w]	70.00[w]	125.00[w]	72.50[w]	1.30	65.00	1.30	70.50	3.13[f]	50.00
Cleveland	62.00	56.50	41.50	65.00	75.00	125.00	80.00	1.35/1.50	72.00	.....	65.00[e]	17.50[q]	55.00
Dallas	55.00	52.50	42.50	60.00	68.50	118.00	68.50	2.00	62.25	1.45	68.15	4.50[g,t]	.....
Denver	63.00	54.50	41.00	62.00	75.90	136.00	74.90	.....	71.00[u]	1.30[g]	60.00[u]	11.00[r]	21.00
Detroit	64.00	53.00	37.00	68.00	60.50	100.50	60.50	.....	.....	1.95[b]	68.00	.....	.....
Kansas City	65.00	55.00	40.00	.....	72.00	115.00	73.00	1.40	75.00	2.00	75.00	3.60[d]	53.9[g]
Los Angeles	66.00	60.50	0.33[z]	64.50	75.00	125.00	80.00	.....	88.00	1.35[s]	64.00	4.40[g]	.....
Minneapolis	75.00	65.00	0.41[z]	80.00	78.00	140.00	78.00	2.00[y]	80.00	1.80	80.00	5.50	.....
Montreal	56.00	47.40	36/39	53.00	63.25	.....	63.00	1.50	66.00	1.50	66.00	9.00[g]	58.00
New Orleans	60.00	50.00	45.00	60.00	75.00	140.00	72.50	1.75	65.00[e]	.....	.....	.....	.....
New York	55.25	47.25	36.25	54.25	75.00	120.00	75.00	1.55[b]	68.50	1.55[b]	68.50	4.38[i]	52.50[z]
Philadelphia	50/55	48/53	36.40	49/54	68/73	105/110	55/65	.....	60/70	.....	70/75	5.60/6.34	40/50
Pittsburgh	.....	65.00	40.00	.....	62.50	102.50	57.50	1.05[s]	55.00[s]	1.05[s]	55.00[s]	3.80[s,q]	38.50
St. Louis	67.00	56.50	40.00	70.00	76.50	121.50	80.00	1.35[y]	85.00	1.65	65.00	4.50[q]	.....
San Francisco	57.00	48.00	0.35[z]	58.00	70.00	112.00	69.00	1.60	66.50	1.60	66.50	4.95	55.00
Seattle	68.30	57.65	51.05	65.00	74.50	125.00	73.50	1.60[z]	72.00	1.90[e,p]	50.00[e,j]	4.25	46.50
Toronto	55.00	47.00	38.00	54.50	75.00	.....	.....	1.50	62.50	.....	62.50	16.00[s]	46.00

[e] F.o.b. warehouse. [a] Semi thick. [b] 30# bag. [c] 12' to 24' width. [d] 40# kraft paper, 5 Msf, 100/500 rolls. [e] 20# sq ft bag, 4' thick. [f] Full trailer loads. [g] 80# kraft paper backing 400 rolls or over. [h] LCL. [i] 40#. [j] 80#. [k] 2'. [m] 10 ton quantities. [n] Distributor's siding. [o] Per Msf roll. [p] 32# bag. [q] 500 sf. [r] Per cwt. [s] 35# bag. [t] 28# bag. [u] Flame proof $75. [w] F.o.b. city. [x] Sq. yd. [y] 30# bag. [z] Spun rock wool, 3½ cu ft bags. [A] 650 sf.

MEXICO CITY WAGES & PRICES

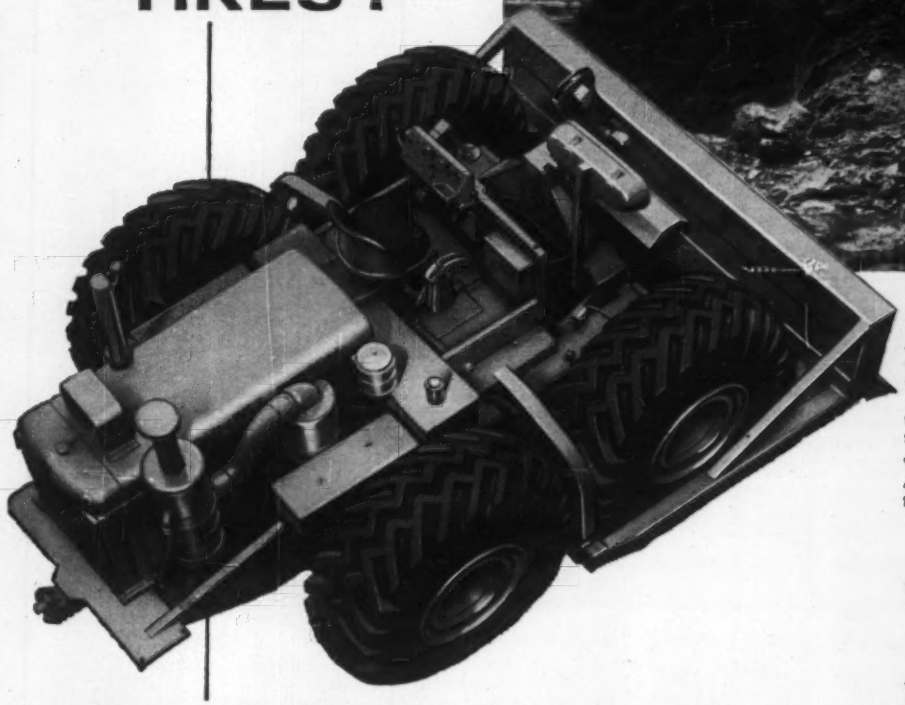
Wages, per 8 hr day, av per hr	Nov. '58	Dec. '58
Common labor, building (peons)	1.57	1.57
heavy const (peons)	2.00	2.00
Skilled labor, carpenters 1 cl	3.25	3.25
bricklayers 1 cl	2.87	2.87
struct. ironworkers	4.38	4.38

Pesos, F.o.b. City		Nov. '58	Dec. '58
Struct. steel shapes, fob Monterrey			
I-beams, 3 x 3 x 4"	per metric ton	2400	1942
Reinf. steel, corrugated rods, per ton			
⅜"–1½" x 11 meters		1800	2000
¼"–1" x 11 meters		1750	2000

Gravel, truckload at 3½ cu meters	Nov. '58	Dec. '58
Blue gravel	84.00	80.00
Rose gravel	65.00	75.00
Cement, std' port. (Tolteca)	230.00	255.00
Lumber, ¾" pine, per M ft.	1700.00	2200.00
1½" pine, per M ft.	1900.00	2100.00

TRACKS?

TIRES?



Heavy-duty Tournatractor — 210 hp — speeds to 17.2 mph forward, 7.2 mph reverse — power-shift constant-mesh transmission with torque converter — multiple-disc air brakes with 3,762 sq in. of braking surface — skid steer — tires: standard 21.00-25 16-ply, optional wide base 26.5-25 14-ply; choice of traction or rock service treads.

Work tool attachments — bulldozer — Angledozer® — root rake — push-block — tree stinger — power-control-unit.

which type of tractor is best?

The *job* is the key to your answer. You have to deal with 2 types of tractor work on every earthmoving contract: (1) concentrated pushing, dozing, and hauling in restricted areas, and (2) scattered hit-and-run work over the entire work site (or *several* work sites).

Q. Which does a better job on these basically different types of work: crawlers or rubber-tired tractors?

A. For necessary "stay put" jobs in limited areas, crawlers may prove best . . . because of their greater lugging power at slow speeds. This means heavy short-haul work, push-loading big scrapers, dozing in mud or rock-filled earth. BUT tractors-on-rubber are better for those "hit-and-run" jobs, where speed and mobility mean extra profit. Such jobs include push-loading, leveling scattered fill, towing "part-time" scrapers, stockpiling, clean-up, maintenance of haul and access roads, finish-grading, emergency push-pull anytime, anywhere, on your project.

Q. What's the best ratio of crawlers-to-rubber for best job efficiency?

A. Analyze the tractor work in your contract schedule. Compare "fixed position" and "mobile" work requirements. You may have only enough "hit-and-run" work for one rubber-tired tractor — or you may need more for extra profit. Chances are that on most jobs, of *any* size, you can profit more with at least *one* heavy-duty tractor-on-rubber.

Q. What does Tournatractor® offer that other rubber-tired tractors don't have?

A. The big difference is *proof of performance.* When you buy a Tournatractor, you're getting a tractor without "bugs". This 210-hp, 17-mph tractor has been used by contractors all over the world on every possible tractor job. Knowledge gained over the years has resulted in continuous improvement in mechanical efficiency and performance. It's the *only* thoroughly job-proven, rubber-tired tractor available for heavy earthmoving work.

Here are a few quick facts about the Model C Tournatractor . . . *Drawbar pull:* as good as comparable priced crawlers at speeds over 2 mph. *Mobility:* to go anywhere at speeds to 17 mph. *Roadability:* travels anywhere without damage to concrete, blacktop, planking, or rail ties. *Quick speed shift:* saves time making speed changes on the run. *Easy operation:* with electric control of dozer blade and other attachments. *Low maintenance:* because of far fewer parts, simple construction.

Ask for a copy of the L-W bulletin 56-061-T for full details.

CT-1977-DC-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate Ready mixed Concrete, Asphalt: Last, Dec. 4; Next, Jan. 8.
- Iron and Steel Products, pipe: Last, Dec. 11; Next, Jan. 15.
- Wood Products, Glass, Explosives, Chemicals: Last, Dec. 18; Next, Jan. 22.
- Wage Rates, Building Board, Lath, Insulation: Last, Dec. 27; Next, Jan. 29.

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$149.90p	$149.90p	$299.80p	$334.55p	.....	.....	$30.50p	$32.70p	$23.50	$24.50	$.....
Baltimore	217.00	231.00	434.00	491.00	602.00	690.00	36.00k	41.00k	35.60	23.20	.....
Birmingham	135.00p	152.00p	.....	303.00p	376.00p	465.00p	27.00ff	38.00y	35.02	22.30	26.33g
Boston	232.00t	248.00†	463.25†	556.00†	.....	.....	41.50p	46.50p	39.20†	31.20†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	30.00	32.00	38.00	35.20e	.....
Cincinnati	205.00j	225.00j	296.00jdd	213.00j	288.00j	314.00j	48.75j	47.00j	28.00j	24.50j	28.00j
Cleveland	200.00	213.00	.....	438.00	.....	.....	40.00	43.00gg	32.75	28.00	.....
Dallas	152.00	152.00	300.00	364.50	446.25	552.50	7.50	48.00	41.80	24.58	25.50
Denver	.....	.....	.....	.....	.....	.....	21.50	49.50	46.00p	42.00p	46.00p
Detroit	205.00	219.00	410.00	.....	598.00	674.00	47.50p	48.00p	38.00	30.00	.....
Kansas City	158.00	158.00	312.00	312.00	400.00	500.00	33.00	33.00	36.26	34.26	29.76
Los Angeles	r	r	r	r	r	r	32.00§	.....	38.00	38.00	39.00
Minneapolis	192.00p	215.00p	437.00p	215.00pw	.....	.....	45.60xp	54.00y	47.00bbe	37.00bbe	49.00bbde
Montreal	170.00au	178.00au	325.00aus	270.00q	400.00q	.....	48.25b	56.30b	39.00	22.00	13.25
New Orleans	186.00	186.00	380.00	380.00	.....	.....	42.00	55.00	44.00	32.00	32.00P
New York	176.90h	188.70h	283.00ch	285.50hn	.....	.....	44.00	.....	40.00	37.00	.....
Philadelphia	169.00	180.20	337.90	405.00	.....	.....	30/34	38/42	27.60	25.60	3.17m
Pittsburgh	147.50t	157.75t	295.00t	335.00t	435.00t	500.00t	39.00t	46.00t	36.00t	31.00t	.....
St. Louis	172.00n	180.00p	375.00p	401.00p	459.00	621.50	41.50l	43.00	0.95aa	.80aa	1.35s
San Francisco	156.85*	177.10*	235.30dd*	.....	.....	.....	43.00*	43.00*	29.24	29.24	31.74
Seattle	235.00p	270.00p	490.00p	265.00pw	.....	.....	48.00	62.00	52.00bb	38.00bb	4.50mbb
Toronto	158.00	173.50	336.00	263.00f	378.00	.....	35.00	63.00	36.00	33.50	31.50

*§ F.o.b. yard. **F.o.b. plant Stockton. *† F.o.b. yard Roxbury. *a Smooth. *b $4.50 del. *c 8 x 12 x 12 in.-6 cell. *d Pulverized hot. *e 5%, 10th following month. *f 8 x 8 x 12. *g Lumps, $26.72. *h F.o.b. trucks, job site N.Y.C. *i 60 lb sacks. *j Truck load or over. *k $1.00 discount. *l Red face. *m Per bbl., 180 lb. processed. *n 7¾ x 7¾ x 12. *o Mason's double hydrated pressure. *p Truck lots. *q Provincial and Municipal tax extra. *r Not used; earthquake danger *s 8 x 16 x 12. *t 2% cash. *u Incl. Federal tax. *v Sand lime. *w 5 x 8 x 12 *y Chi common. *z Pebble; 80 lb sack. *aa 50 lb sack. *bb LCL. *dd 6 x 12 x 12. *ff 80% common. *gg Smooth. $51.50 Rough.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

	RED LEAD Per 100 lb. In 600-lb. (Approx.) bbl. Dry a	WHITE LEAD Per 100 lb. In 100 lb. cases in oil w	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$14.25	$30.125	$3.50	$3.86	$3.31	$3.39	$2.20	$2.62	$0.67	$57.75
Baltimore	14.00	29.75	3.00	4.40	3.50	2.78	4.25	4.25	.48	54.25
Birmingham	14.25	30.125	3.90	3.40	....	3.09	2.29ii	2.29ii	.82ff	45.00ee
Boston	14.00	29.75	....	....	....	3.81q	2.56g	2.83g	.50g	58.00g
Chicago	14.00	29.75	....	....	....	4.05‡u	3.02‡o	3.32‡o	46.00‡bbv	57.70‡
Cincinnati	14.00	29.75	....	....	....	2.59	2.02	2.42	.428y	55.96
Cleveland	14.00	29.75	2.49pgg	3.30gg	2.90gg	3.51q	2.44o	2.85	.58y	49.00gg
Dallas	14.25	30.50	....	3.25B	....	3.00u	3.00o	3.00o	.470	66.00kk
Denver	14.50	30.25	3.98	5.20	3.70	2.96	2.16o	2.55o	.48ff	50.00
Detroit	14.00	29.75	2.70	3.95	2.70	3.11	2.23o	2.42o	.51‡ff	49.00
Kansas City	14.00	30.50	3.99	3.43	3.01	3.58ii	2.61o	2.61o	.71y	.....
Los Angeles	14.00	30.00	3.30n	4.50n	4.20n	3.20n	2.15nii	l	.70ny	l
Minneapolis	14.00	29.88/29.75	....	....	....	3.09	2.52hi	2.42hi	.442i	50.00r
Montreal	.....	24.05	5.02Dff	5.94zff	4.65kff	5.40	4.65f	4.65f	1.60	.....
New Orleans	.....	.....	....	....	....	2.78	1.98	2.85	0.680	.....
New York	13.00C	29.75	....	....	....	3.10	2.09o	2.45o	.425z	49.00*
Philadelphia	14.00	29.75	3.60	3.40/3.65	3.50/4.60	3.00/3.30	2.54o	2.54o	.37/.45	48/54
Pittsburgh	14.00	29.75	2.20#F	2.25#F	2.25#G	3.37z	2.59z	.....	.45	.....
St. Louis	14.00	29.75	.....	.....	.....	3.27iiz	2.39kk	2.85kk	.28y	62.00
San Francisco	14.00	30.00	3.20	4.30	3.50	2.95	2.09aa	3.21	.50ff	56.00
Seattle	14.00	30.25	3.47	4.19cc	....	4.02qcc	3.50hcc	.....	.55cc	51.40cc
Toronto	.....	.....	5.00	5.75	5.50	5.15	4.00c	2.90o	1.25j	55.00A

*† Delivered. * Note: Red lead in oil 50% higher than white lead in oil. ** Aver. wt. approx. 425 to 550 lb drums. *a Red lead prices change frequently due to pig lead price changes. *b U.S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e 15 lbs. *f Per 432 sq ft. *g F.o.b. yard, Roxbury. *h Per roll, 55 lb. *i Net carload prices, Minneapolis and vicinity. *j 45 gal containers *k Over 80% ferric oxide. *l Not used. *n F.o.b. city. *o Per 60 lb roll. *p 6-drum, 50 gal each. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Incl. Federal tax. *u Per 90-lb square. *v Per ton. *w Price to contractors $1.25 less. *x Ready-mixed. *y 55-gal container. *z Drums. *aa 15 lb. sq ft. price changes. *bb Roofers coating and cement. *cc LCL, truck delivery. *ee Asphalt pitch in 100 lb package. *ff 5-gal drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per roll. *jj Asbestos roof coating. *A 400 lb barrels. *B ASTM Spec. D962-49 *C 95%. *D Std. black. *F Milt. spec.: E TTP27; F TTV81; G TTP31. *H No quoted after Oct. 1957. *R revised.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER‡ Neat per ton	Gauging per ton	VERMICULITE‡ Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated	PERLITE‡ Plaster Aggregate	Concrete Aggregate Untreated	ALUMINUM SHEETh† Flat .102" th 36"x96" & 48"x144" per lbjt	Corr roof .032" th 35"x12' per shu	STAINLESS STEEL† SHEET-TYPE 302g 20 ga 48"x96-120" per cwthh	28 ga 36"x120" per cwtmm	COPPER WATER* TUBING-TYPE L 2000 ft lots per ft ⅜"b	½"c
			per bag of 4 cu ft										
Atlanta	$31.00	$36.00	$1.55s	$1.65s	$1.80sl	$1.65	$1.65	$0.424n	$9.45n	$61.44n	$67.50	$16.74f	$23.41f
Baltimore	23.80	34.60	0.95	1.15	1.15	1.15	1.65	0.487	0.489r	64.70	73.45	0.1674	0.2371
Birmingham	33.00	39.00	1.55	1.55	1.80l	1.55	1.55l	0.458d	10.48	67.34	76.09	0.1620	0.2261
Boston	22.00	30.00	1.40	1.40	1.45	1.45	1.50	0.462	29.35p	65.42dd	71.92ddff	0.1680	0.2345
Chicago	26.80	26.80	1.55	1.60	1.60l	1.60	1.60	0.506z	10.294a	65.15aee	73.90aee	0.1644	0.2295
Cincinnati	23.85*	23.85*	1.75	1.75	1.75	1.85	1.90	0.434	9.56	65.28	74.03ff	0.1608	0.2244
Cleveland	28.00	45.00	1.13k	1.16ii	1.24l	1.45	1.45	0.458aa	8.48	65.33oo	74.08oo	16.80f	23.45f
Dallas	30.65	32.65	1.07	1.23	1.32	1.21	1.32	0.484	0.517r	65.00	78.00	0.1520	0.2170
Denver	25.00	25.00	1.50	1.40	1.50	1.40	1.55	0.446	9.75	67.32gg	76.09gg	0.1772	24.69
Detroit	26.00	26.00	1.27	1.31	1.40	1.43k	1.50k	0.456a	10.376a	65.15a	79.90a	22.00f	26.75f
Kansas City	30.00	35.00	1.14	1.18	1.26l	1.18	....	0.444	9.50	67.50	76.25	16.80f	23.45f
Los Angeles	27.00	28.00	1.25k	1.20k	1.25	1.06	1.10	0.486	10.543d	67.02	75.77	0.1620	0.2261
Minneapolis	35.00	35.00	1.55	1.70	1.80	1.40	1.40	0.468	16.23w	65.71	2.21ff	0.1644f	0.2295
Montreal	27.60h	35.60k	1.25	1.40	1.50	1.15s	1.15s	0.495	12.10	64.75	.....	0.1827	0.2160
New Orleans	34.00	48.00	1.25	1.25	1.25	1.25	1.25	0.50	8.715	71.50	72.45	0.1585	0.2209
New York	25.25	31.25	1.35	1.30	1.50	1.40	1.40	0.493ad	10.929a	68.58	77.33	16.08f	22.44f
Philadelphia	23/25	32.00	1.35	1.35	1.40l	1.05qq	1.05qq	0.44aw	9.46a	66/68a	75/77a	15.62f	21.76f
Pittsburgh	30.00nn	33.00nn	1.60nn	1.50nn	1.35	1.73	1.73	0.452	9.46	64.00	76.25pp	0.1430	0.1596
St. Louis	29.00	40.00	1.35	1.60ff	1.55	1.60	1.60	0.452	10.11	65.61	72.11y	16.44fm	22.95fm
San Francisco	29.50	30.50	1.38	1.38	1.50	1.38o	1.58o	0.502	9.05	67.10	73.60	0.1680	0.2345
Seattle	42.40	45.60	1.55	1.25k	1.85l	1.50k	....	0.50	9.90	67.02	75.77	0.1680	0.1876
Toronto	28.00	45.50	1.20	1.30	1.35l	....	1.55	0.3995	24.75ae	73.74	86.52	0.2662	0.2870p

‡trucklots, delivered †fob warehouse *fob city *a delivered *b ½" O.D. *c ⅝" O.D. *d 0.100"th *e 34" x 60" sheet *f per 100 ft *g 5 tons & up; cold roll, anneal & pickled 2B finish *h incl. Federal tax *i add 25¢ for pint of additive *j 1100 & 3003 alloy, mill finish *k bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob mill fr equalized with nearest stocking competitor *o 250 sacks or more *p 100 sq ft *r per lb *s 30 lb bag *t 36" x 96;-10.81 lb/sh; 48" x 144"; 21.7 lb/sh *u 19.31 lb/sh *v fob plant *w 48" x 144" *x 100lh *y 27 gauge *aa 16M lb & up *dd add $1.00 cwt boxing *ee 4 tons & up *ff 25 ga *gg add $2/cwt boxing; $0.75/cwt on skids *hh Theoretical wt for 48" x 96"; 80.4-lb, per sh *ii 300-bag lots *jj 100-lb bag *mm Theoretical wt; 19.7-lb per sh *nn 2% cash *oo skid packed *pp type 304 *qq Philadelphia and suburbs *R revised.

B Tournapull is available with 325 hp GM power-plant, or, as torque-converter "B", with 335 hp Cummins engine.

This scraper loads more pay-yards...faster... because it makes better use of its "horses"

Compare BIG scrapers available today, and you'll note that most of them offer engines in the 300 horsepower range. This "flywheel hp," however, is only *part* of the scraper power-picture. *More* important... as far as load size and loading speed is concerned... is how much of that power is *wasted*, and how much is actually *used*.

Consider, for instance, the 325 to 335 hp LeTourneau-Westinghouse B Tournapull® with 28-yd Fullpak® scraper. This machine gets *bigger loads faster* because it makes *fullest possible use* of power — its own, and that of its pusher. Here's how...

Low, wide bowl cuts power loss

Its Fullpak scraper design, for instance, is an important power-saver. Low and wide, it lets dirt flow back into the bowl almost on a straight line. With blade in ground, Fullpak floor has a rise of only 1°, front to back. That means that more prime-mover power can be concentrated on *pulling* and *cutting*, less on *lifting*.

Because Tournapull's push-block is low, maximum pusher-thrust is directed squarely behind the blade where it's needed. Pusher-plate, push-block, and scraper-blade "line up" for concentration of maximum power. Direct line of push also eliminates "humping"... steadies the scraper for easier loading and more accurate grading.

Construction details of the "B" also cut power-waste, because they reduce friction-loss. Heavy-duty roller bearings, for instance, are used throughout. Welded steel construction eliminates force wasted in twisting and distortion. Tournapull's simple design eliminates a lot of heavy hardware, whose dead-weight robs you of power. And drive-train is short-coupled, efficient... doesn't waste power in detours between engine and work application.

"Electrics" use hp only when needed

Electric controls are horsepower savers, too. Instead of continually dragging on your engine, as hydraulics do, current for Tournapull scraper controls is generated only when needed. And the *instant* response of "electrics" eliminates wasteful "build up" of power for operating scraper controls.

Look at the *whole* power-picture when you compare scrapers. For complete information on the B 'Pull*, see your nearby LeTourneau-Westinghouse Distributor.

*Trademark BP-1748-DC-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

WHEN EVERY MINUTE COUNTS...

Project: Bridge, U.S. Highway #79 Relocation, north of Marianna, Arkansas.
Part of Madison-Marianna Floodway Project, St. Francis River Basin

To construct the piers for this 926′ long bridge, the contractor also had to excavate for that portion of the Madison-Marianna Floodway ditch channel under the bridge structure.

This involved digging 45′ down in sandy clay, black gumbo, and sand — all of it WET!

Under constant threat of floods from the critically high water level in the St. Francis Basin, four 8″ Moretrench Pumps and 280 Moretrench Wellpoints, pumping over 6,000 gallons per minute, kept the hole dry. Contractor's crews worked around the clock to complete this important part of the Floodway Project.

When every minute counts — as it does on any wet job — **count on a MORETRENCH WELLPOINT SYSTEM to keep you going — in the dry.**

Call our nearest office for an accurate estimate on predraining your wet work.

MORETRENCH CORPORATION

90 West St.	4900 S. Austin Ave.	7701 Interbay Blvd.	315 W. 25th St.	Rockaway
New York 6	Chicago 38, Illinois	Tampa 9, Florida	Houston 8, Texas	New Jersey
CO 7-2283	Portsmouth 7-4212	Tampa 61-1881	Underwood 4-7774	Oakwood 7-2100

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington
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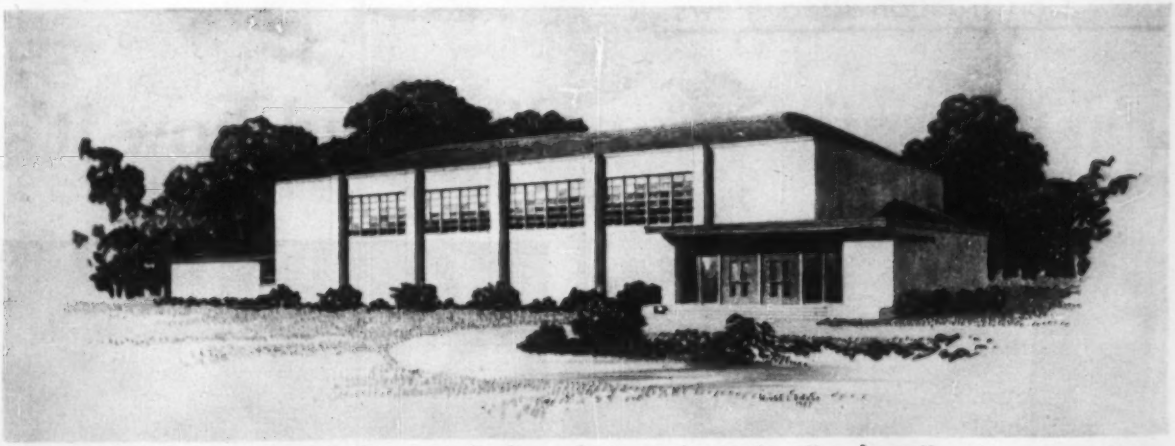
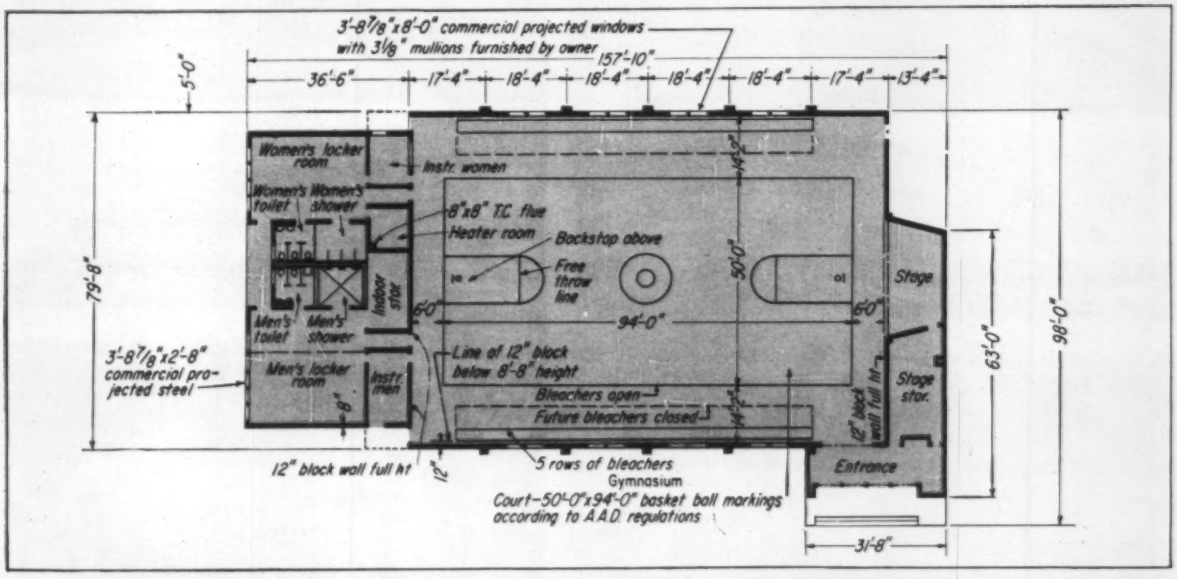


Kings College Gymnasium-Auditorium, built as design-construction "package" . . .



. . . costs only $29.59 per cu ft $7.47 per sq ft, combines quality with low maintenance.

Contractor Retains the Architect

Robert F. Borg

General Manager
Kreisler-Borg Construction Co.
White Plains, N. Y.

At unit costs far below any record for similar facilities in its area, King's College of Briarcliff Manor, N. Y., is building a gymnasium-auditorium.

It's designed for an ultimate student capacity of 800, with bleacher capacity for 1,000 spectators at sports events. The gymnasium has a standard 50 x 90 ft basketball court.

Instructed to do the job as economically as possible, Kreisler-Borg Construction Co. hired consulting architect Matthew Warshauer. Together, we came up with these cost savers:

- Prefabricated wood trusses.
- Concrete block exterior walls.
- Elimination of frills and unnecessarily expensive materials.

But to assure fine quality, we used such materials as first grade maple flooring on wood sleepers set in mastic. And low maintenance costs are guaranteed by installing oil-fired, hot air heat.

The $91,338 structure has 12,230 sq ft of usable floor area, 20 ft of clear headroom in the gymnasium and a cube of 308,628 cu ft. Price includes design cost. But the owner supplied 16 of 42 windows and sashes, painting, plastering, also some rock excavation not a part of the structure cost.

The unit costs are $114 per pupil, $91 per spectator seat, $29.59 per cu ft and $7.468 per sq ft.

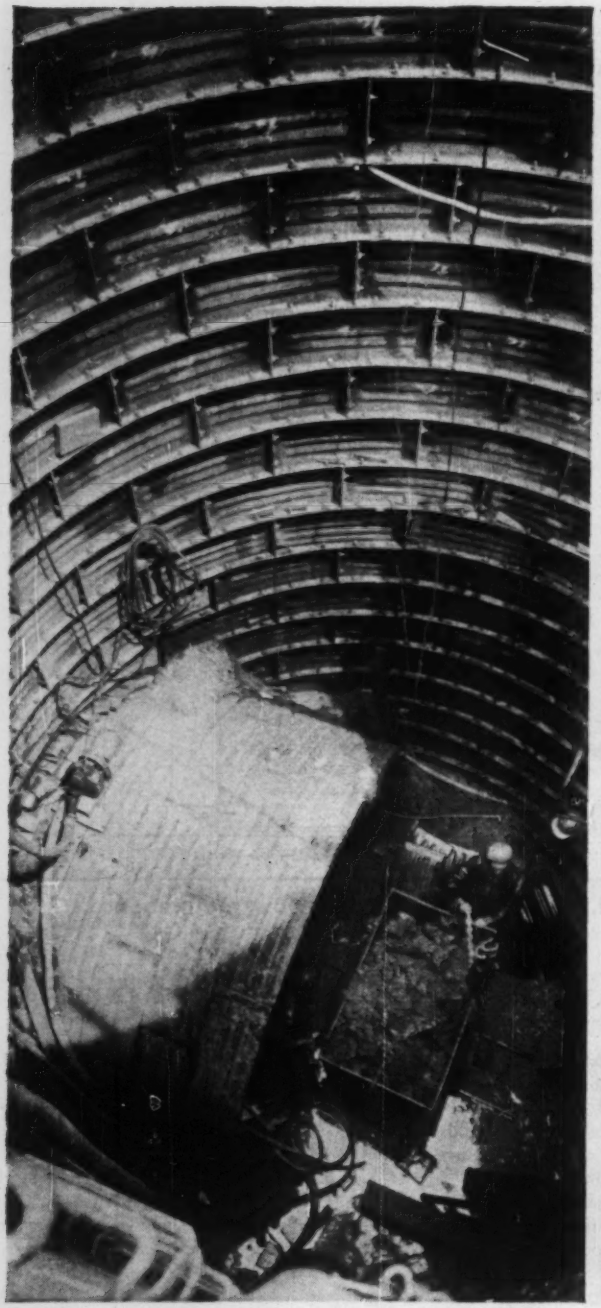
Foundations are on rock or virgin soil. Footings are 1:2:4 mix portland cement concrete. Slabs, on hard tamped earth with 4 in. cinders fill over it, are 4 in. concrete reinforced with 6 x 6-in., 6-gage welded wire mesh. Visqueen was used as a vapor barrier under the concrete floors.

Construction operations uncovered numerous underground springs and abandoned drain lines. As additional protection against water, the contractor

(*Advertisement*)

New Construction Idea News

Faster, safer tunneling and how it's



COMPLETED IN 3 WORKING DAYS—352 COMMERCIAL tunnel liner plates reinforce 192" diameter, 30 feet deep, initial access shaft for Tousley Construction Co. section of the sewer project. As vertical shaft bored downward, the 16" x 37 11/16" tunnel liner plates were successively secured in position with 3/4" bolts.

UNCLUTTERED WORKING AREA at Thompson Construction Co. access shaft permits easy entry into tunnels and allows fast removal of 5/8 cubic yard mucking bucket loaded with chunks of hard-packed blue clay from tunnel heading. Bucket is lifted and dumped at surface by crane equipped with 35 ft. boom.

(*Advertisement*)

being done

Steel liner plates produced by COMMERCIAL for speedier assembly and greater safety factor *prove unanimous choice* of two different contractors on $1,710,000 Indianapolis storm interceptor sewer project.

Contracts for the nearly two miles of tunneling involved in the East Michigan Street storm sewer job at Indianapolis, Indiana were awarded to two separate firms. And here's what they had to say about their independent choice of COMMERCIAL steel tunnel liner supports:

"No other liner plate can compare with COMMERCIAL for easier and faster installation and assembly," says Mr. Porter Williams, Secretary of the Thompson Construction Company. "And among all steel tunnel liner designs, we are firmly convinced there is none safer than COMMERCIAL's," he added.

"We have been using COMMERCIAL tunnel liner plates exclusively for three years," commented Mr. Don Bixler, President of the Tousley Construction Company. "Their consistent size and uniformity simplifies placement and speeds fastening," he continued.

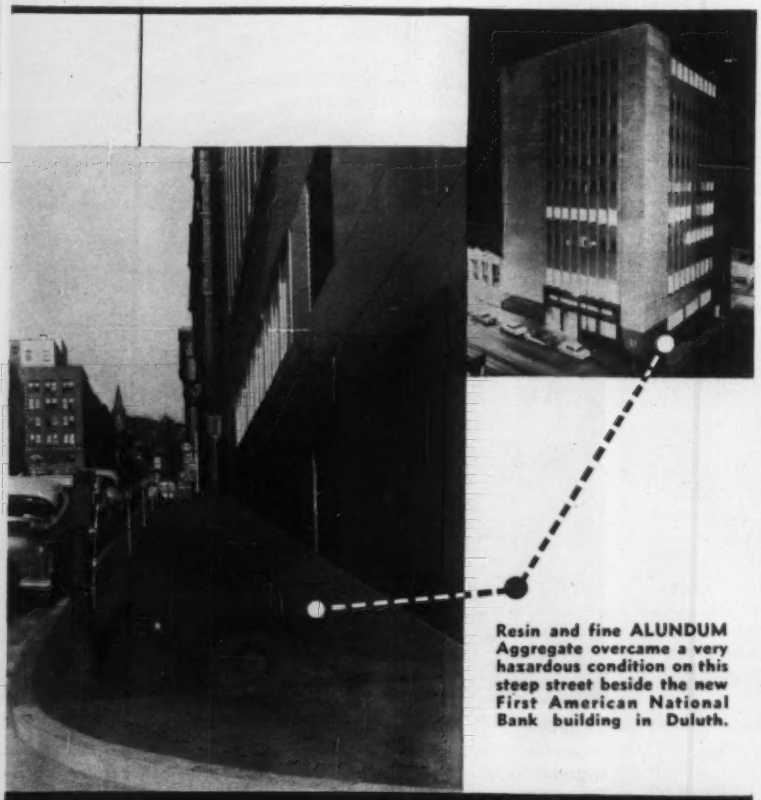
The Thompson Construction Company is handling 5400 feet of the tunnel project—two sections of 48" and 84" in diameter. Both sections are being tunneled simultaneously but in opposite directions through hard-packed blue clay soil. The 84" diameter tube will house a 60" I. D. pre-cast concrete pipe, while the 48" section will enclose a similar 18" pipe. Space between pipe and liner shell will eventually be filled with concrete. In addition, twelve 21 ft. deep vertical shafts, each fitted with manholes for future access, will be dug at strategic points along the complete length of the tunnel.

The Tousley Construction Company, on another contract, is constructing 4500 feet of tunnel, 900 feet of which will be 10 ft. in diameter and the balance of 3600 feet 11 ft. in diameter. Pre-cast concrete pipe 96" and 102" in diameter will eventually line the entire tunnel. Progress on the job, which will also include six 30 ft. deep vertical shafts for future access, is moving along at the rate of 12 feet per day in spite of the hard-packed blue clay and water seepage complications involved.

For more complete details on how COMMERCIAL steel liner plate can simplify and speed up your vertical shaft, surface or sub-surface tunnel project—help make it safer—send today for your copy of Bulletin 300-CI. With over 25 years experience in the design of supports for soft ground or rock excavation, COMMERCIAL's engineers may be able to suggest a more workable and economical solution to your particular support design problem whatever it may be. Address: Commercial Shearing & Stamping Company, Dept. E-52, Youngstown 1, Ohio.

10 FEET PER DAY is average rate of progress in each of the concurrent Thompson tunnels. As fast as mucking operation progresses, 3/16" thick COMMERCIAL liner plates are rapidly installed by the head miners. The size and uniform shape of the plates facilitate their storage alongside mucking car tracks.

NO OUTSIDE BOLTING—Deep flange which surrounds all four sides of COMMERCIAL plate eliminates this hazard. All head miner does is to position plate, line up accurate pre-punched bolt holes, insert 3/4" quick acting bolts and tighten nuts with a pin wrench. No fear of loose fit because inside through-flange connections eliminate need of outside support for bolt heads.



Resin and fine ALUNDUM Aggregate overcame a very hazardous condition on this steep street beside the new First American National Bank building in Duluth.

RESIN plus NORTON ABRASIVE...

A new, easy, economical way to provide SAFE WALKING Surfaces - Indoors or Out

Just brush, roll or spray on one of the new resins* — sprinkle over it a uniform layer of Norton abrasive — then add a second locking coat of resin — RESULT — a surface that is highly non-slip, wet or dry, and extremely resistant to wear.

For each job there's a Norton abrasive that's just right. It can be one of the sidewalk abrasives — ALUNDUM† or CRYSTOLON† — in the correct size or it can be the finest size of ALUNDUM† Aggregate.

Alundum (C.F.) Aggregate

For a floor that will provide the very maximum of durability plus a permanently non-slip surface, wet or dry, the answer is ALUNDUM (C.F.) Aggregate in cement. You'll find it widely used indoors or out in floors, ramps and stairs in all kinds of structures — industrial and public. Write for Catalog 1935EN for complete information and suggested specifications.

*Names and installation instructions on request.
†Trademark reg. U. S. Patent Office

NORTON
NON-SLIP FLOORS

NORTON COMPANY
WORCESTER 6, MASS.

ALUNDUM AGGREGATE for Terrazzo and Cement • ALUNDUM STAIR and FLOOR TILE
ALUNDUM and CRYSTOLON Sidewalk Abrasives

. . . Kings College

placed an extra two-ply-membrane waterproofing between the wood gymnasium floor and the concrete subfloor.

Piers supporting the roof trusses are 2 x 3 ft. They are of 75% solid concrete block filled with 1:2½:5 portland cement concrete. Interior footings are immediately under the floor on virgin soil.

All materials exceed minimum requirements of state and local building codes and of the National Board of Fire Underwriters. Structural lumber is Douglas Fir—minimum 80% construction grade except roof trusses. Trusses are designed for a maximum allowable wood strength of 1450f with all members of graded Douglas Fir Select. Five wood bow string trusses support the main roof which is designed for a live load of 40 lb per sq ft.

The heating system uses two furnaces, one for the locker room area and one for the gymnasium.

The locker room furnace has 188,000 BTUH capacity at the bonnet with an input of 235,000 BTUH. The 18 in. blower is equipped with ¾ hp motor, variable speed sheave and V belt drive. Filters are the throwaway type, one 16 x 20 x 2 in. and two 20 x 25 x 2 in.

The gymnasium furnace has 700,000 BTUH capacity at the bonnet with an input of 875,000 BTUH.

Electric service is 200 AMP 3 wire 3 phase, fused at 150 AMP.

Tom Grasso is general superintendent for Kreisler-Borg. Wheeler Davis and Johnny Cricco are field superintendents.

Where Construction $s Went:

	%
Excavation (excluding special rock)	1.6
Concrete, incl footings, piers, sub floor	11.0
Masonry, concrete block	26.8
Structural steel	1.9
Carpentry, incl roof trusses, joists, deck	16.9
Millwork	0.7
Steel sash (furn 26, install 42)	0.8
Glazing	1.4
Roofing, insulation, sheet metal	10.2
Hollow metal	0.4
Main entrance aluminum	0.7
Flooring, gymnasium and stage	7.8
Hardware	1.4
Toilet partitions	0.7
Plumbing	4.8
Heating	10.3
Electrical	2.6
Total	100.0

How floor space was used:

12,230 sq ft	Inside Dimensions	% of total
Locker Rooms	26′ 8″ x 20′0″	4.59
	26′ 8″ x 28′8″	6.58
Toilets ....2@	9′ 0″ x 9′3″	1.43
Shower Rooms ...2@	9′ 8″ x 9′3″	1.44
Instructor's Rooms	8′10″ x 12′0″	0.91
	8′10″ x 17′0″	1.29
Indoor Storage	8′10″ x 18′8″	1.42
Halls ....2@	8′10″ x 4′0″	0.60
Heater Room	8′10″ x 10′0″	0.71
Gymnasium	106′ 0″ x 78′4″	71.41
Stage	13′ 4″ x 29′0″	3.33
Stage Storage	13′ 4″ x 29′0″	3.33
Entrance Lobby	30′ 4″ x 11′4″	2.96

Easiest blasting method known . . . just pour oil-soaked Spencer N-IV Ammonium Nitrate into drill hole and detonate with ⅜-inch cord.

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A typical blast of 21 6½-inch holes at a Midwestern cement plant.

If loaded with all dynamite:	
4210# Dynamite (Main & deck charge)	$829.33
1600′ Primacord	50.32
20 M.S. Connectors	10.51
Total	$890.16

And NOW, with Spencer N-IV Ammonium Nitrate and ⅜-inch detonating cord:	
4292# Ammonium Nitrate	$155.15
660′ ⅜-inch cord	36.30
300′ 50-grain cord	9.30
54 Gals. No. 2 Diesel fuel	7.02
20 M.S. Connectors	10.51
Total	$218.28

Most economical blasting method known . . . in this typical blasting operation the saving over dynamite is $672 or 75%.

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Costs 75% Less Than All Dynamite"

Now—Spencer N-IV gives you the industry's most efficient low cost explosive:

Think of saving 75c of every dollar you now spend for blasting with dynamite. Unbelievable? Not today! These are actual savings reported by a midwestern cement company.

These savings are now possible because of the development of revolutionary new Spencer N-IV Ammonium Nitrate. Spencer N-IV is different from any prilled ammonium nitrate now on the market. Here's why:

1. Increased oil-absorption . . . special structure of Spencer N-IV prills absorbs oil more easily. This gives you easier detonation and a superior blast effect.

2. Reduced priming cost . . . new Spencer N-IV Ammonium Nitrate can be initiated with a single strand of ⅜-inch detonating cord. No need for attaching additional material at intervals, or other complex priming methods.

3. Greater blast energy . . . Spencer N-IV contains a much higher percentage of ammonium nitrate than other brands on the market. Yet it's completely free-flowing — easy to load, easy to shoot.

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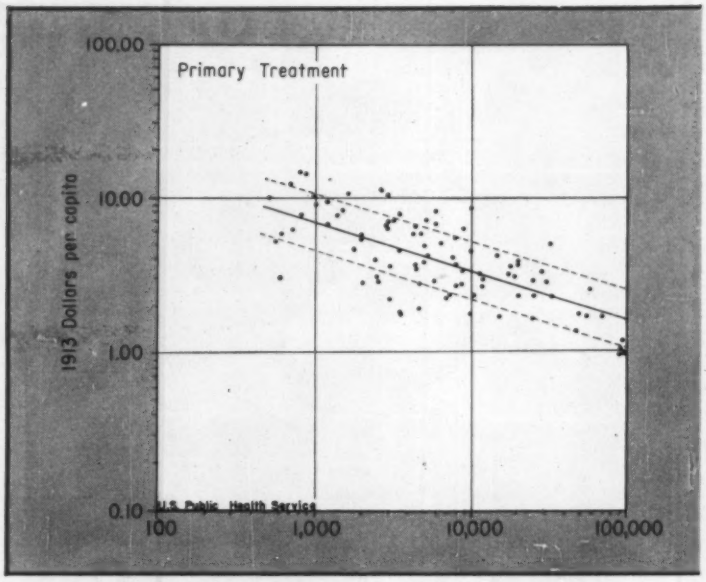
New cost-per-capita curves for sewage treatment plants are presented here in the first report on a study begun last summer by the U. S. Public Health Service. Like ENR's Construction Cost Index, curves are based on 1913 dollars. Current index, therefore, updates costs determined from curve.



How to Estimate Sewage Plants

John R. Thoman
Senior Sanitary Engineer
and
Kenneth H. Jenkins
Analytical Statistician
Water Supply and Water Pollution Control Program, U. S. Public Health Service

This is the first report of a study begun last summer by the Public Health Service to determine what sewage treatment plants cost.

Using contract cost data for projects receiving financial assistance under the Federal Water Pollution Control Act (P. L. 84-660), cost curves have been developed for primary and secondary treatment and for stabilization ponds (lagoons). These curves show cost per-capita based on the design population.

Curves to estimate treatment-plant costs have many uses. Chief among these is in the development of estimates in the early planning stages of such projects.

The curves permit more realistic engineering and financial planning, provide reliable norms for comparison, and furnish public relations material.

The solid line in each chart represents the most probable cost, as derived by the method of least squares. The dashed lines are limits encompassing two-thirds of the data points (one standard error of estimate on each side of the solid line).

The curves are applicable within the population limits shown. Extension to larger or smaller design populations would be a doubtful procedure.

Local costs at any time are determined by multiplying three factors together: per-capita cost from the curve, the design population, and the current Construction Cost Index for the particular locality (see map).

• **Example**—A primary plant for a design population of 1,000 is to be built in the Seattle area. From the primary cost curve, a value of $6.80 is obtained. The December index for Seattle is 799. The most likely construction cost of a treatment plant would be $6.80 x 7.99 x 1,000—$54,330. About two-thirds of the cases would be expected to fall between $85,500 and $36,750, the range between the upper and lower dashed lines on the primary cost curve.

The curves are based exclusively on projects receiving grants under P. L. 84-660 and involving only sewage treatment plants. Interceptor, outfall, pumping station and similar costs are not included, nor are projects for additions and enlargements. Land, legal, architectural, financing and interest costs also are excluded.

Inspection showed substantial variation in the indexes for the 20 cities that make up the ENR Construction Cost Index. For 1957, with an average U. S. index of 724, the low city was Atlanta with an index of 532. New York was high with an index of 863. Accordingly, the problem resolved itself into reducing individual project cost data on the basis of the city index most likely to affect it.

The United States is divided into 20 areas for this study, each assigned to one of ENR's indexed 20 cities. The area distribution was made using a trading area distribution map widely accepted in marketing and trade-analysis work. The resulting distribution of areas, while somewhat arbitrary in a few instances, is the best available when working under the limitation imposed by the location of the 20 cities.

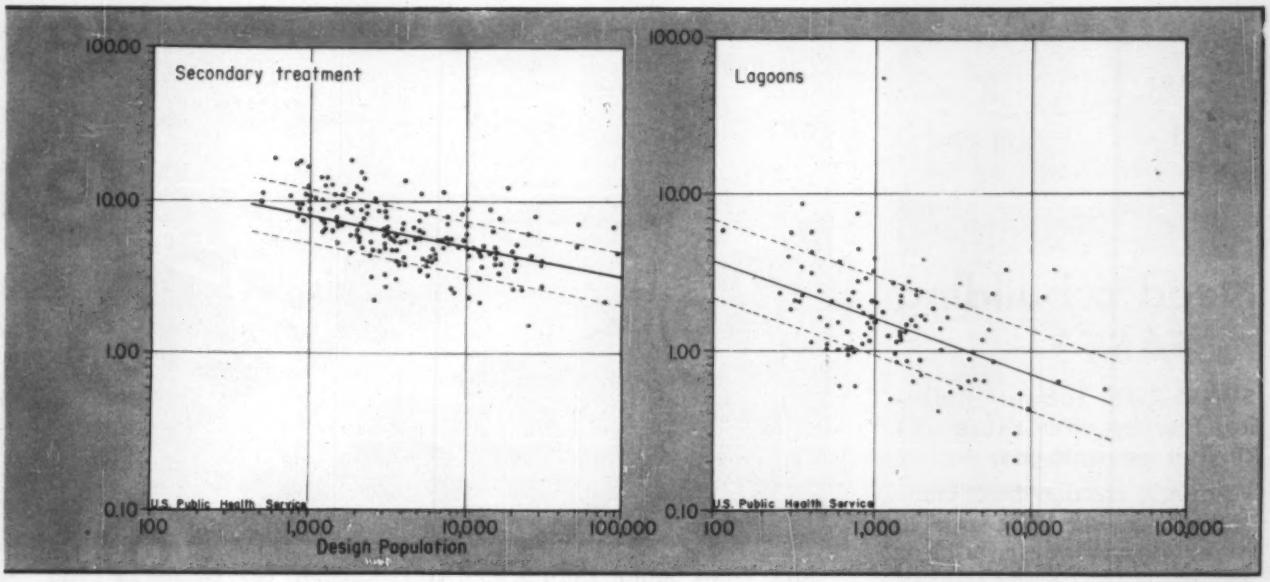
Data were processed using modern, electronic computing equipment for punched cards. New data can be introduced with little difficulty.

The data included in this analysis include 104 primary plants, 183 secondary plants and 101 stabilization ponds. Geographically, 33 states are represented in the primary group and 35 in the secondary group. Six states were not represented in either. The 101 stabilization ponds were included from 19 states, but 50% of them were from four states—North and South Dakota, Missouri, and Wyoming.

• **Limitations**—These cost curves are not intended to present a patent, handbook approach to estimating sewage treatment plant contract costs. They are subject to many limitations.

Former analyses of such cost data (Velz, ENR Oct. 14, 1948, p. 84, and Diachishin, ENR Oct. 17, 1957, p. 316) were based on design flow rather than on design population.

Such analysis was considered for this study. However, more data points were available when using the design population basis. Since both methods are



Quickly

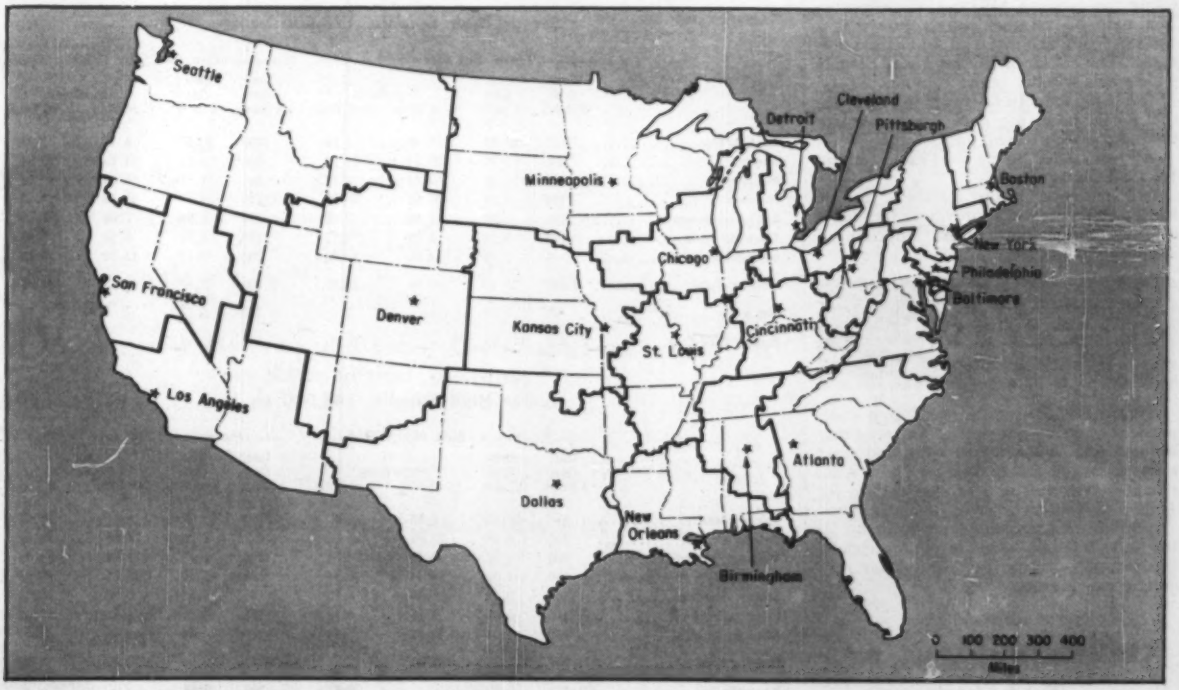
based on estimates of future conditions, not wholly independent of other design factors, the method used was that which provided the largest amount of data.

A more correct picture of costs would be obtained if the data were analyzed on the basis of organic loading of the plants. Such data, however, are seldom available.

Perhaps the best method of analysis would be on a capitalized-cost basis, taking into account features that affect operation and maintenance costs.

Portions of the data used in developing these curves were analyzed with respect to the design per-capita flow. While these varied considerably, 113 of 211 primary and secondary plants were in the range of 100 to 125 gal per capita per day. Almost equal numbers of cases were higher and lower than this group.

The preliminary analysis here includes a substantial number of cases, but more cases will increase the statistical significance of the curves. The data-processing system has been designed so that additional data may be incorporated at any time, and the Public Health Service plans to rerun the cost curves about every six months. It may be assumed that significant refinements will develop. A general tightening of confidence limits should result, and curves for individual processes will be developed as sufficient numbers of cases become available.



REGIONAL PRICES are no problem with monthly indexes available for 20 cities (ENR Dec. 18, p. 80).

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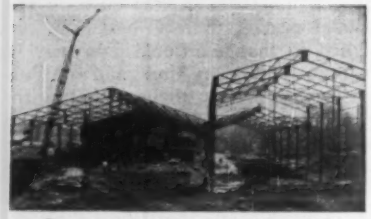

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Jack Yates Senior High School cost Houston, Tex., more in 1956

How Prices Dropped

As evidence of the "profitless prosperity" confronting school contractors in today's market (ENR 10-2-58) R. J. Simmonds, vice president of Linbeck Construction Corp., Houston, Tex., has supplied contract prices on two pairs of matching schools which show that school prices are down 2½% in two years while materials and labor costs have gone up 7%. How the changes are

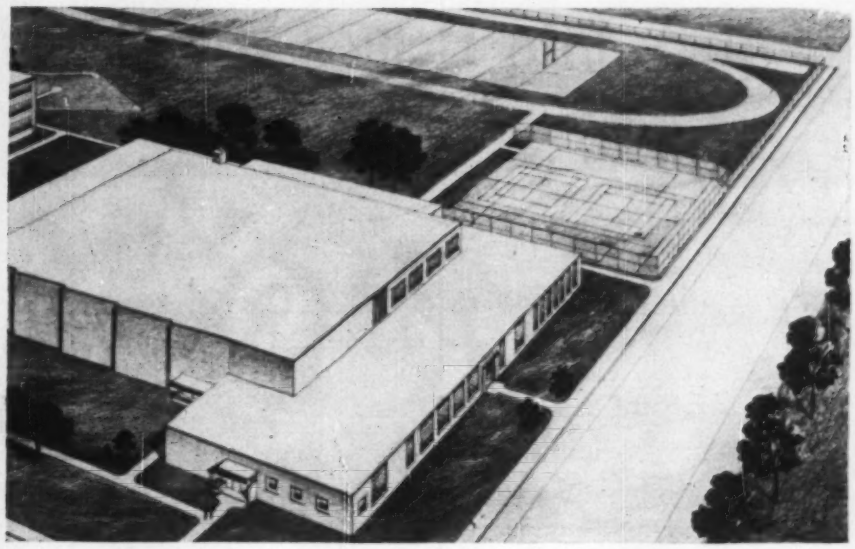
Unit and Ratio Costs Show Where Differences Are:

Senior High Schools, 178,000 sq ft

	Yates, Bid Oct. 1956				Ella, Bid Oct. 1958			
	Total Cost $ thous.	Unit Cost $/sq ft	Ratio Costs % of Bldg %	Ratio Costs % of Total %	Total Cost $ thous.	Unit Cost $/sq ft	Ratio Costs % of Bldg %	Ratio Costs % of Total %
Job overhead	$107	$0.60	4.48	4.32	$102	$0.57	4.45	4.22
Structural	600	3.37	25.14	24.22	554	3.11	24.19	22.94
Masonry	242	1.36	10.14	9.77	244	1.37	10.66	10.10
Finishes	764	4.29	32.01	30.85	783	4.40	34.19	32.43
School equipment	188	1.06	7.88	7.59	174	0.98	7.60	7.20
Electrical work	143	0.80	5.99	5.77	128	0.72	5.59	5.30
Mechanical work	343	1.93	14.36	13.85	305	1.72	13.32	12.63
Building Total	2,387	13.41	100.00	96.37	2,290	12.87	100.00	94.82
Site work	90	0.51		3.63	125	0.70		5.18
Project Total Cost	$2,477	$13.92		100.00	$2,415	$13.57		100.00

Junior High Schools, 148,000 sq ft

	Kashmere, Bids Nov. 1955				Meyerland, Bid July, 1958			
	Total Cost $ thous.	Unit Cost $/sq ft	Ratio Costs % of Bldg %	Ratio Costs % of Total %	Total Cost $ thous.	Unit Cost $/sq ft	Ratio Costs % of Bldg %	Ratio Costs % of Total %
Job overhead	$96	$0.65	4.90	4.60	$100	$0.68	5.21	4.95
Structural	456	3.08	23.29	21.83	462	3.12	24.05	22.86
Masonry	300	2.02	15.32	14.36	285	1.93	14.84	14.10
Finishes	596	4.02	30.44	28.53	542	3.66	28.21	26.82
School equipment	142	0.95	7.26	6.80	128	0.86	6.66	6.33
Electrical work	115	0.78	5.87	5.50	125	0.84	6.51	6.19
Mechanical work	253	1.71	12.92	12.11	279	1.89	14.52	13.80
Building Total	1,958	13.21	100.00	93.73	1,921	12.98	100.00	95.05
Site work	131	0.90		6.27	100	0.68		4.95
Project Total Cost	$2,089	$14.11		100.00	$2,021	$13.66		100.00



than its twin did in 1958

for Matching Schools

distributed is shown in the tables that follow for the 2½ year and 2 year periods between bidding one junior and one senior high school and its respective twin. Architects for the junior high schools are Wirtz, Calhoun, Tungate & Jackson of Houston and for the senior high schools, Herbert Voelcker & Associates of Houston, with Milton McGinty as coordinating architect.

Contract Prices for Matching Schools

	Junior High			Senior High		
	Kashmere Nov. 1955 $ thous.	Meyerland July 1958 $ thous.	Change 2 yr. 8 mos.	Yates Oct. 1956 $ thous.	Ella Oct. 1958 $ thous.	Change 2 yrs.
General contract						
Job overhead	$96	$100	+ 4%	$107	$102	− 5%
Structural	456	462	+ 1%	600	554	− 8%
Masonry	300	285	− 5%	242	244	+ 1%
Finishes	596	542	− 9%	764	783	+ 2%
School equipment	142	128	−10%	188	174	− 7%
Total general	1,590	1,517	− 5%	1,901	1,857	− 3%
Electrical	115	125	+ 9%	143	128	−10%
Mechanical	253	279	+10%	343	305	−11%
Building total	1,958	1,921	− 2%	2,387	2,290	− 4%
Site work	131	100	−24%	90	125	+38%
Contract total	$2,089	$2,021	− 3.3%	$2,477	$2,415	− 2.5%
Cost per sq ft	$14.11	$13.66	− 3.2%	$13.92	$13.57	− 2.6%

How Material and Labor Costs Increased as School Prices Decreased

ENR Building Cost Index	480	530	+10%	500	535	+ 7%
Wages, skilled	$3.22	$3.34	+ 4%	$3.24	$3.50	+ 8%
common	1.72	1.85	+ 7%	1.75	1.95	+11%
Concrete (5 SK)	11.75/cy	13.90/cy	+18%	12.80/cy	$13.90/cy	+ 9%
Structural steel	0.12/lb	0.114/lb	− 5%	0.114/lb	0.073/lb	−36%

Facilities Provided and How Space was Used:

	Kashmere-Meyerland Junior High Schools			Yates-Ella Senior High Schools		
	sq ft	%	facilities	sq ft	%	facilities
Classroom, plus library and offices	64,000	43	44 stations	80,000	45.0	45 stations
Auditorium, plus band room and 2 choral rooms	26,000	18	1,050 seats	28,000	15.6	1,186 seats
Shop (including boiler room)	13,000	9	3 shops	14,000	7.9	5 shops
Cafeteria and kitchen	14,000	9	700 seats	16,000	9.0	800 seats
Gymnasiums, plus all locker rooms	26,000	18	2 gyms	35,000	19.7	2 gyms
Swimming Pool	5,000	3	25'x75'	5,000	2.8	25'x75'
Total area	148,000	100		178,000	100.0	

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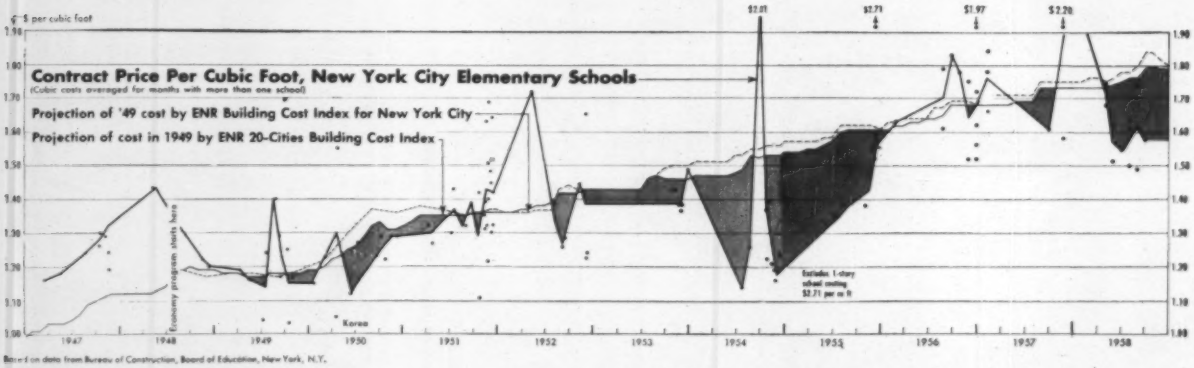
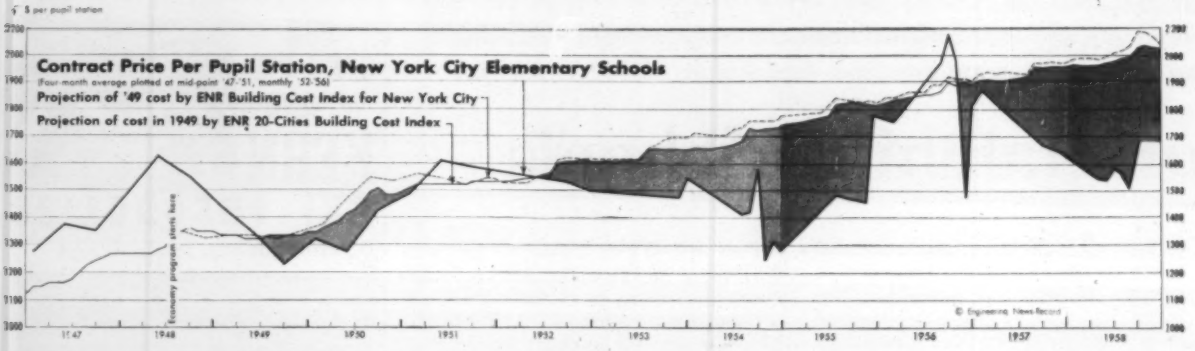
School Costs Drop, While Prices Rise



Based on data from Bureau of Construction, Board of Education, New York, N.Y.



In the battle raging in New York City over school costs (ENR Dec. 18, p. 27) Controller Lawrence E. Gerosa charges that $100 million in seven years, 20% of the cost of new schools, has been wasted in "frills," in excessive architect fees and in single rather than multi-use of plans. No skulduggery is involved.

What the averages show is that while costs have gone up 53%, contract prices per pupil in elementary schools are up only 17%, in junior high schools only 9%.

Minimum elementary school prices are up 27% while maximum prices are up only 2.6%. For junior high schools minimum prices per pupil are up 11% while maximums are up 4%.

The spread per pupil between maximum and minimum price elementary schools has been cut from 43% in 1949 to 15% in 1958. For junior high schools this spread has been cut from 23% in '49 to 16% in '58.

Average contract prices per cubic foot are up 36.4% for elementary and 36.7% for junior high schools since 1949 against a 53% rise in labor and materials costs. Minimum prices are up 44.7% for elementary and 50.5% for junior high schools while maximum prices are up 24.3% for elementary and 18.3% for junior highs.

In rebuttal to the Gerosa charges the Board of Education claims that $110 million has been saved through lowered ceilings, squared off rooms, more economical furniture, wall materials, and types of construction, also that new designs can be built for less than schools built from old plans on hand.

As to frills, only 1 cent in $10 goes for "embellishment."

A school "austerity" program adopted in 1948 became effective in 1949. So 1949 prices are projected to show what school contract prices would be if they had matched the uptrend in materials and labor costs in the ENR Building Cost Index for New York City.

Unit Prices of Schools Built in New York City—by Years

Bureau of Design and Construction, Board of Education, City of New York

Elementary Schools

	no.	per cu ft min	per cu ft aver	per cu ft max	per pupil sta min	per pupil sta aver	per pupil sta max	capacity, pupil stas min	capacity, pupil stas aver	capacity, pupil stas max
1947	(9)	$1.16	$1.25	$1.56	$1,255	$1,517	$1,991	558	1,162	1,550
1948	(5)	1.20	1.30	1.43	1,399	1,581	1,784	806	1,094	1,433
1949	(12)	1.03	1.18	1.40	1,148	1,334	1,638	868	1,181	1,588
1950	(11)	1.04	1.20	1.55	957	1,357	1,612	302	1,036	1,581
1951	(24)	1.11	1.39	1.69	1,447	1,710	2,451	358	885	1,274
1952	(9)	1.23	1.40	1.72	1,391	1,518	1,689	494	969	1,310
1953	(6)	1.37	1.41	1.49	1,202	1,488	1,570	792	944	1,238
1954	(9)	1.14	1.33	2.01*	1,216	1,354	1,580	302	1,073	1,292
1955	(10)	1.35	1.61	2.71	1,338	1,653	2,059	133	1,117	1,364
1956	(12)	1.52	1.69	1.97	1,467	1,811	2,361	842	1,244	1,631
1957	(7)	1.52	1.74	2.20	1,564	1,731	2,136	487	1,134	1,400
1958*	(11)	1.49	1.61	1.74	1,463	1,558	1,680	1,265	1,342	1,651

Junior High Schools

	no	per cu ft min	per cu ft aver	per cu ft max	per pupil sta min	per pupil sta aver	per pupil sta max	capacity, pupil stas min	capacity, pupil stas aver	capacity, pupil stas max
1947	(2)	$1.21	$1.23	$1.25	$1,270	$1,277	$1,284	1,810	2,068	2,326
1948	(1)	1.32	1.32	1.32	1,623	1,623	1,623	1,518	1,518	1,518
1949	(3)	0.99	1.09	1.26	1,261	1,380	1,553	1,518	1,819	1,998
1950	(1)	1.07	1.07	1.07	1,210	1,210	1,210	2,012	2,012	2,012
1951	(5)	1.32	1.36	1.38	1,408	1,511	1,645	1,558	1,842	2,020
1952	(7)	1.10	1.22	1.31	1,187	1,342	1,451	1,732	1,813	2,058
1953	(7)	1.10	1.22	1.29	1,176	1,280	1,462	1,766	1,968	2,185
1954	(6)	1.10	1.23	1.30	1,237	1,322	1,517	1,694	1,969	2,138
1955	(11)	1.25	1.44	1.63	1,370	1,580	1,904	1,772	1,950	2,114
1956	(6)	1.49	1.64	2.02	1,580	1,711	1,895	1,764	1,958	2,166
1957	(4)	1.53	1.65	1.74	1,730	1,709	1,815	1,769	1,924	2,183
1958*	(2)	1.49	1.49	1.49	1,506	1,665	1,617	1,814	2,006	2,197

* Includes contracts awarded from Jan through Nov 7 Prices unadjusted for abnormal foundation or site costs, which makes '58 prices slightly higher than if adjusted as are prices for 1947-57

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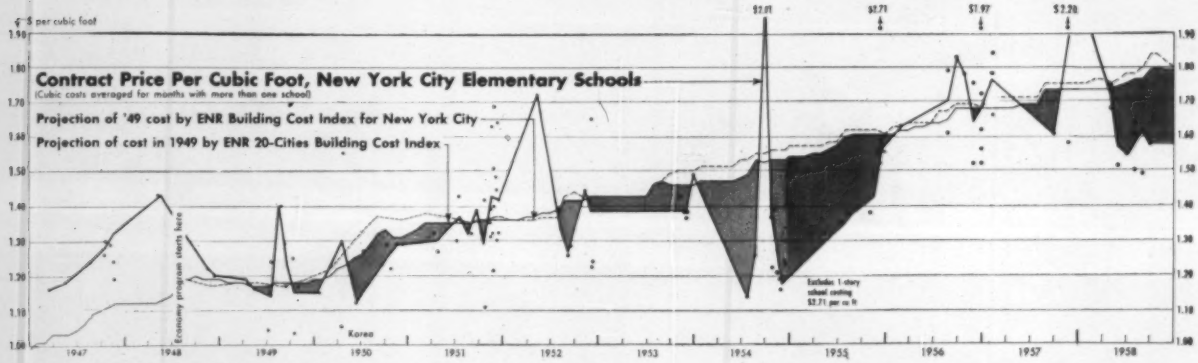
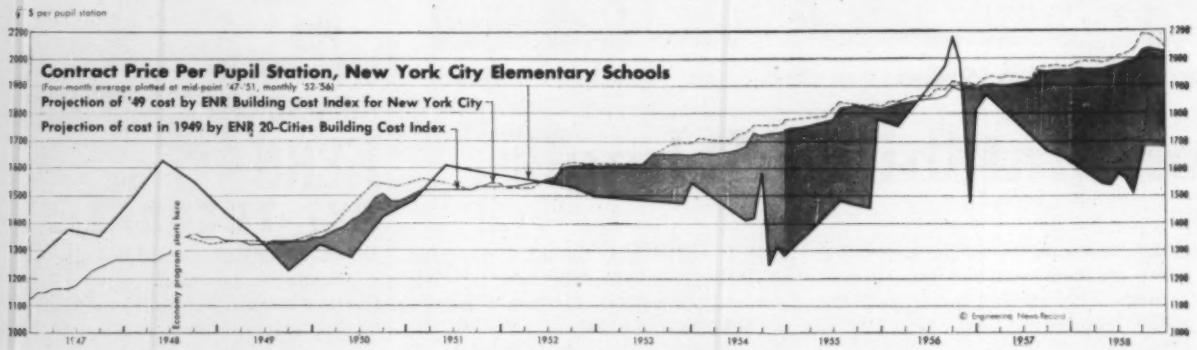
United States Steel

School Costs Drop, While Prices Rise



Based on data from Bureau of Construction, Board of Education, New York, N.Y.



In the battle raging in New York City over school costs (ENR Dec. 18, p. 27) Controller Lawrence E. Gerosa charges that $100 million in seven years, 20% of the cost of new schools, has been wasted in "frills," in excessive architect fees and in single rather than multi-use of plans. No skulduggery is involved.

What the averages show is that while costs have gone up 53%, contract prices per pupil in elementary schools are up only 17%, in junior high schools only 9%.

Minimum elementary school prices are up 27% while maximum prices are up only 2.6%. For junior high schools minimum prices per pupil are up 11% while maximums are up 4%.

The spread per pupil between maximum and minimum price elementary schools has been cut from 43% in 1949 to 15% in 1958. For junior high schools this spread has been cut from 23% in '49 to 16% in '58.

Average contract prices per cubic foot are up 36.4% for elementary and 36.7% for junior high schools since 1949 against a 53% rise in labor and materials costs. Minimum prices are up 44.7% for elementary and 50.5% for junior high schools while maximum prices are up 24.3% for elementary and 18.3% for junior highs.

In rebuttal to the Gerosa charges the Board of Education claims that $110 million has been saved through lowered ceilings, squared off rooms, more economical furniture, wall materials, and types of construction, also that new designs can be built for less than schools built from old plans on hand.

As to frills, only 1 cent in $10 goes for "embellishment."

A school "austerity" program adopted in 1948 became effective in 1949. So 1949 prices are projected to show what school contract prices would be if they had matched the uptrend in materials and labor costs in the ENR Building Cost Index for New York City.

Unit Prices of Schools Built in New York City—by Years

Bureau of Design and Construction, Board of Education, City of New York

Elementary Schools

		per cu ft			per pupil sta			capacity, pupil stas		
	no.	min	aver	max	min	aver	max	min	aver	max
1947	(9)	$1.16	$1.25	$1.56	$1,255	$1,517	$1,991	558	1,162	1,550
1948	(5)	1.20	1.30	1.43	1,399	1,581	1,784	806	1,094	1,433
1949	(12)	1.03	1.18	1.40	1,148	1,334	1,638	868	1,181	1,588
1950	(11)	1.04	1.20	1.55	957	1,357	1,612	302	1,036	1,581
1951	(24)	1.11	1.39	1.69	1,447	1,710	2,451	358	885	1,274
1952	(9)	1.23	1.40	1.72	1,391	1,518	1,689	494	969	1,310
1953	(6)	1.37	1.41	1.49	1,202	1,488	1,570	792	944	1,238
1954	(9)	1.14	1.33	2.01*	1,216	1,354	1,580	302	1,073	1,292
1955	(10)	1.35	1.61	2.71	1,338	1,653	2,059	133	1,117	1,364
1956	(12)	1.52	1.69	1.97	1,467	1,811	2,361	842	1,244	1,631
1957	(7)	1.52	1.74	2.20	1,564	1,731	2,136	487	1,134	1,400
1958*	(11)	1.49	1.61	1.74	1,463	1,558	1,680	1,285	1,342	1,651

Junior High Schools

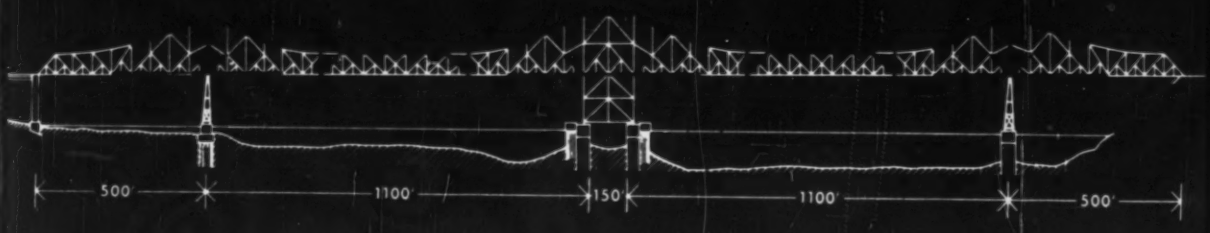
		per cu ft			per pupil sta			capacity, pupil stas		
	no	min	aver	max	min	aver	max	min	aver	max
1947	(2)	$1.21	$1.23	$1.25	$1,270	$1,277	$1,284	1,810	2,068	2,326
1948	(1)	1.32	1.32	1.32	1,623	1,623	1,623	1,518	1,518	1,518
1949	(3)	0.99	1.09	1.26	1,261	1,380	1,553	1,518	1,819	1,998
1950	(1)	1.07	1.07	1.07	1,210	1,210	1,210	2,012	2,012	2,012
1951	(5)	1.32	1.36	1.38	1,408	1,511	1,645	1,558	1,842	2,020
1952	(7)	1.10	1.22	1.31	1,187	1,342	1,451	1,732	1,813	2,058
1953	(7)	1.10	1.22	1.29	1,176	1,280	1,462	1,766	1,966	2,165
1954	(8)	1.10	1.23	1.30	1,237	1,322	1,517	1,894	1,969	2,136
1955	(11)	1.25	1.44	1.63	1,370	1,580	1,904	1,772	1,950	2,114
1956	(8)	1.49	1.64	2.02	1,580	1,711	1,895	1,784	1,959	2,166
1957	(4)	1.53	1.65	1.74	1,730	1,709	1,815	1,789	1,924	2,183
1958*	(2)	1.49	1.49	1.49	1,506	1,665	1,617	1,814	2,008	2,197

* Includes contracts awarded from Jan through Nov 7 Prices unadjusted for abnormal foundation or site costs, which makes '58 prices slightly higher than if adjusted as are prices for 1947–57

First major bridge application of USS "T-1" Steel

saves 2,128 tons of steel

and—because of lighter weight—material, foundation and shipping costs were greatly reduced



Nearly 500 of more than 1,000 gusset plates and 142 of 664 truss members of the new Carquinez Bridge were made from USS "T-1" Steel.

The weldability and 90,000* psi minimum yield strength of this remarkable constructional alloy steel went hand in hand with the designers' desire to keep dead weight to a minimum. For example, one of the highly stressed lower chord members, if made of A242 type steel at an allowable stress in tension of 17,620 psi, would have weighed 53,000 lbs. The same member, designed in USS "T-1" Steel at an allowable stress of 34,340 psi and with lower loading due to reduced weight of other members, weighed only 27,000 lbs., a savings of 26,000 lbs. for the single member. The total savings, thanks to USS "T-1" Steel, amounted to 2,128 tons of steel.

*Now 100,000 psi for plates up to 2½ inches thick.

Efficient use of USS "T-1" Steel was possible, of course, only with companion use of USS TRI-TEN High-Strength Low-Alloy Steel for truss members, gusset plates, and other parts of the bridge where stress, weight and cost calculations required strength intermediate between that of USS "T-1" Steel and that of structural carbon steel. USS TRI-TEN Steel's 46,000 psi minimum yield point and its weldability made it the steel to use.

FOR MORE INFORMATION, write on your company letterhead for a copy of our comprehensive booklets on USS "T-1" Steel and on USS TRI-TEN Steel—a veteran of many other major bridges. Or contact our nearest representative. You'll find him listed in your telephone directory under "United States Steel."

"T-1" Steel members shown in red.

COMPLETED AHEAD OF SCHEDULE

The second bridge across Carquinez Strait introduces revolutionary design and construction ideas

The traffic bottleneck that has plagued motorists on heavily traveled Route 40 between the San Francisco Bay area and the Sacramento Valley has finally been broken with the opening of a second bridge across the Carquinez Strait.

The new $20-million bridge, on the right, opening about a month ahead of schedule, also breaks engineering precedents. It is the *first* major bridge to be built with *shop-welded* instead of riveted truss members. It is the *first* to use the tremendously *strong* USS "T-1" Constructional Alloy Steel for highly stressed truss members. And it is the *first* bridge of its kind to have its joints connected with *high-strength* structural bolts.

At a glance, the two bridges, both of which were fabricated and erected by American Bridge, look identical. Yet, in design and construction, the new Carquinez span is vastly different from its 31-year-old counterpart. The old bridge is a riveted structure made with carbon and structural silicon steels and heat-treated eyebars. The new bridge has shop-welded members connected at the truss joints by high-strength structural bolts, and its design and construction take full advantage of modern, weldable, high-strength steels.

All in all, 2,910 tons of USS "T-1" Steel, a very high yield strength weldable alloy steel, 5,370 tons of USS TRI-TEN Steel, a weldable, high-strength low-alloy steel, and 6,440 tons of structural carbon steel went into the new 3,350-ft.-long bridge.

Built for the State of California.
Designed by California Division of Highways.
Fabricated and erected by American Bridge Division, USS.

A COLOR MOVIE AVAILABLE SOON—"Challenge at Carquinez-Project 56.14." Factual, entertaining, colorful film soon to be released covering this revolutionary bridge from design through construction. Ideal and enlightening for all engineering groups. 16mm film, 27 minutes long. Bookings now being accepted. Write to Pittsburgh Film Distribution Center, 525 William Penn Place, Pittsburgh 30, Pa.

USS, "T-1" and Tri-Ten are registered trademarks

American Bridge Division of USS **United States Steel**

In the new Carquinez Bridge . . .

100% efficiency welds save 20% in weight of tension members

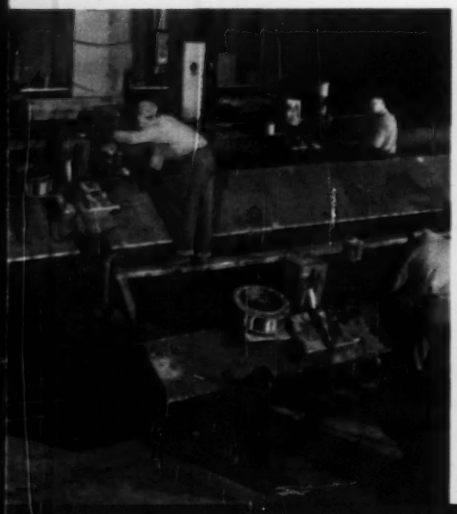
. . . and the smooth, rivet-free surface is less vulnerable to corrosion . . . less costly to paint, too!

Fabrication by welding instead of riveting reduced the number of truss member shapes to *three:* H-sections, box sections, and box sections with an interior web. And, all members could be made from plates only, thus eliminating the use of connecting angles. Shop fabrication was simplified, because all stitch riveting was replaced by just four or eight continuous fillet welds, and the weight of structural members was reduced by the elimination of many extraneous detail parts.

Another advantage of welded construction was that 100% efficiency butt welds made it possible to attach thicker plates at the ends of tension members to compensate for the loss in section and strength due to the holes required for connecting them at the truss joints. This novel use of welding saved 20% in the weight of tension members.

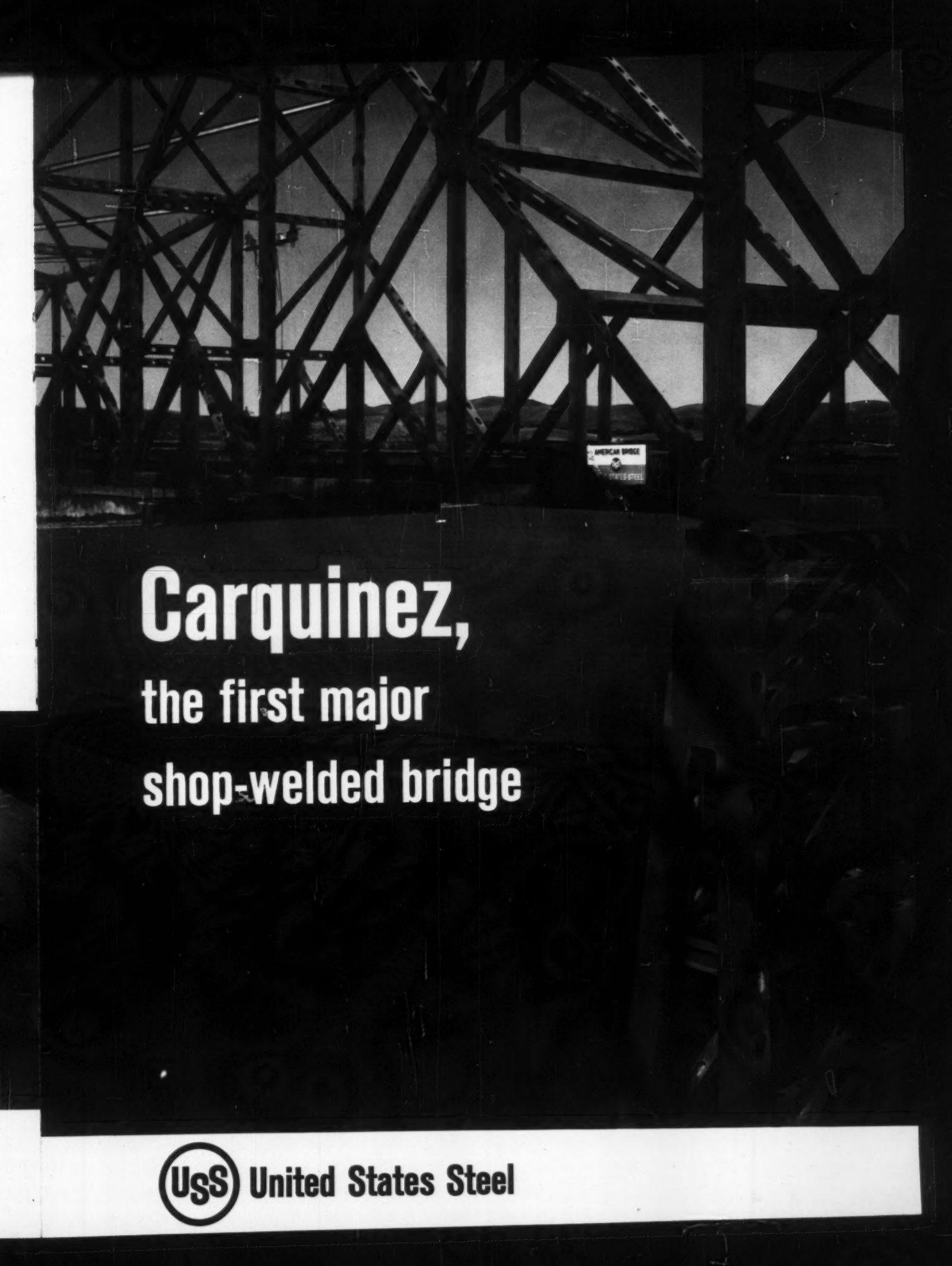
The smooth surfaces of the welded members—being free from rivet heads, lacing bars and other details vulnerable to corrosion—will reduce the frequency and cost of future painting.

Even for an organization that has built so many of the world's greatest bridges, this revolutionary structure was a real challenge, demanding a full range of welding equipment, proper procedures and highly skilled, experienced personnel. The challenge was answered on November 25, 1958, weeks ahead of schedule, when this clean, modern span broke the bottleneck on Route 40 and gave bridge designers another avenue of opportunity as well.



Fully automatic and semi-automatic submerged arc and manual shielded metal arc welding were involved in the shop fabrication of this revolutionary bridge.

American Bridge Division of USS United States Steel

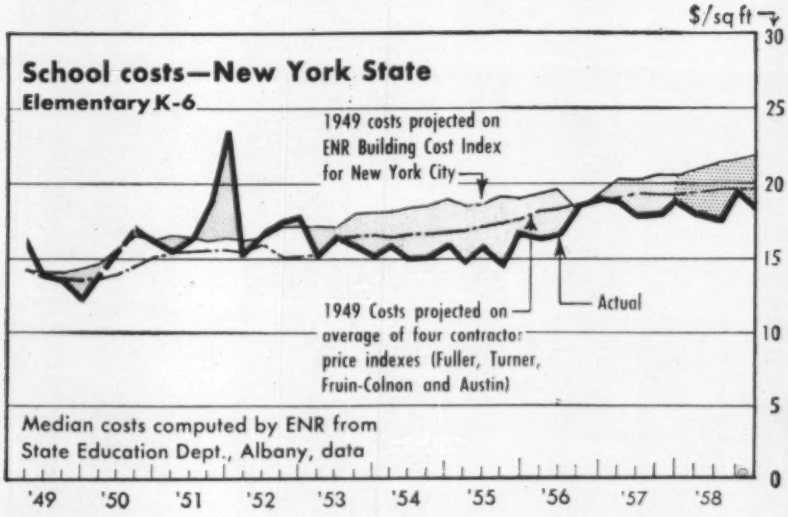


Carquinez,

the first major shop-welded bridge

United States Steel

Prices Rise Less Than Costs



School Costs Per Square Foot in New York State

State Education Department, Division of School Buildings and Grounds

	No. of Schools K-6 Total	Elementary, K-6 Dollars per sq ft for schools with . . . One Large Unit* Min	Med	Max	Two Large Units* Min	Med	Max	Three Large Units* Min	Med	Max	No. of Schools 7-12 Total	Secondary, 7-12 Dollars per sq ft Min	Med	Max
1949.....	29	$10.40	$14.00	$19.20	$12.00	$14.60	$18.70	.....	.....	.....	4	$13.20	$13.55	$16.20
1955.....	52	11.75	16.40	23.60	11.90	15.70	20.25	$14.90	$14.90	$15.90	13	12.55	17.10	18.50
1956.....	53	12.90	17.85	23.80	13.25	17.65	21.10	16.50	16.80	17.10	7	15.40	18.15	20.90
1957.....	50	14.65	19.28	25.20	12.90	18.10	21.75	.....	18.70	.....	10	16.40	18.61	20.60
'55, Q1..	17	13.60	16.40	17.35	12.70	14.53	15.90	.....	14.90	.....	4	12.55	15.15	17.50
Q2..	17	11.75	15.83	19.90	11.90	15.70	17.20	.....	.....	.....	3	15.60	17.20	17.30
Q3..	8	17.50	19.25	19.90	15.90	16.90	20.25	.....	.....	.....	4	15.30	16.40	18.50
Q4..	12	15.50	16.95	23.60	.....	.....	.....	.....	15.90	.....	2	18.25	18.33	18.40
'56, Q1..	11	14.95	15.10	18.40	14.45	16.80	18.50	.....	.....	.....	2	16.75	18.33	20.90
Q2..	18	14.40	16.50	18.55	14.60	18.00	19.00	.....	17.10	.....	2	15.80	16.98	18.15
Q3..	9	12.90	19.10	21.60	14.15	18.50	21.10	.....	16.50	.....	2	15.40	17.25	19.10
Q4..	15	16.00	20.70	23.80	13.25	18.85	21.00	.....	.....	.....	1	.....	18.60	.....
'57, Q1..	11	17.80	18.58	19.35	15.70	19.23	21.75	.....	18.20	.....	1	.....	18.51	.....
Q2..	14	14.65	19.60	25.20	12.90	18.10	19.00	.....	.....	.....	5	18.70	19.35	20.00
Q3..	11	18.60	19.15	19.40	14.40	17.78	18.40	.....	.....	.....	3	16.40	19.50	20.60
Q4..	14	16.95	20.80	25.20	17.60	19.00	19.60	.....	.....	.....	1	.....	18.90	.....
'58, Q1..	7	18.20	18.30	18.45	16.60	17.48	19.45	.....	.....	.....	2	16.60	17.30	18.00
Q2..	9	16.65	18.55	20.30	16.30	17.80	19.35	.....	.....	.....	4	16.00	17.13	19.70
Q3..	6	16.95	19.65	22.30	16.65	19.85	20.30	.....	.....	.....	..	.....	.....	.....
Q4..	4	19.45	20.13	20.80	15.80	16.38	16.95	.....	.....	.....	..	.....	.....	.....

*** Large Unit includes a general purpose room, gymnasium, auditorium, multi-purpose or other group activity room. These are costs based on the four contracts—general construction, plumbing, electrical, heating and ventilating. They include built-in features, but no movable furniture or equipment. Some minor site improvement may be included, but no major site work and no land costs.**

Elementary, K-6 schools in New York State drew contract prices ranging from $15.80 to $22.30 per sq ft in 1958. Median prices dropped to $17.80 in the 2nd quarter, were $18.20 in 1st and 4th quarters and high at $19.75 in the 3rd quarter.

While costs of labor and materials since 1949 are up 49% in New York City, for the second quarter of 1958, average contract prices of elementary, K-6 schools in New York State are up only 32.5% where one large unit is included, and 21.9% for schools having two large units. Average secondary, 7-12 schools are up 26.4% in the same period.

The rise has been in the minimum price elementary schools; 60% for K-6s with one large unit and 35.8% with two large units. Corresponding maximum price schools are up only 5.7% and 3.5%. The spread between maximum and minimum price schools with one large unit was reduced from 85% in 1949 to 22% in the second quarter of 1958 and for two large unit schools from 56% to 19%.

In the 7-12 schools, however, the minimum price schools are up only 21.2% and the maximum price schools 21.6% with the spread between maximum and minimum the same at 23%.

The square foot prices shown for the third and fourth quarters are subject to revision with more returns in.

WELDED or RIVETED

STEEL PLATE FABRICATION

- Boiler Casings
- Boiler Breechings
- Flues and Ducts
- Condenser Shells
- Condenser Piping
- Heavy Turbine Housings
- Fan and Blower Housings
- Dust Collector Housings
- Industrial Gas Mains
- Expansion Joints
- Hoppers and Bunkers
- Tanks and Vats
- Pressure Vessels
- Wind Tunnels
- Crane Bridge Girders
- Trolley Frames and Trucks
- Rigid Frames
- Roll-Over Fixtures
- Tank Turrets
- Gun Mounts
- Heavy Truck Bodies
- Engine Frames and Bases
- Crawler Frames
- Press Platens and Beds
- Press Columns
- Heavy Machinery Parts and Assemblies
- Gas Seal Hoods for Blast Furnaces
- Furnace Roof Rings
- Design Conversion of Castings to Weldments

MACHINING

- Complete Machining Service—Facilities for Heavy Work of Unusual Dimensions

STRUCTURAL STEEL

- For Buildings, Bridges and Special Purpose Structures
  - Drum Gates
  - Roller Gates
  - Taintor Gates
  - Taintor Valves
  - Protection Angles

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN
Branch Offices in New York and Chicago

MAHON

Fourth Quarterly Round up:

Where The Building Dollar Goes

This is the tenth report in the series. Earlier reports were published in ENR Oct. 8, 1953, pp. 148–149; Sept. 29, 1955, p. 212; July 5, 1956, p. 137; Aug. 2, 1956, p. 62; Dec. 6, 1956, p. 208; Oct. 17, 1957, pp. 279–281; Mar. 20, 1958, p. 96 and Sept. 18, 1958, p. 100.

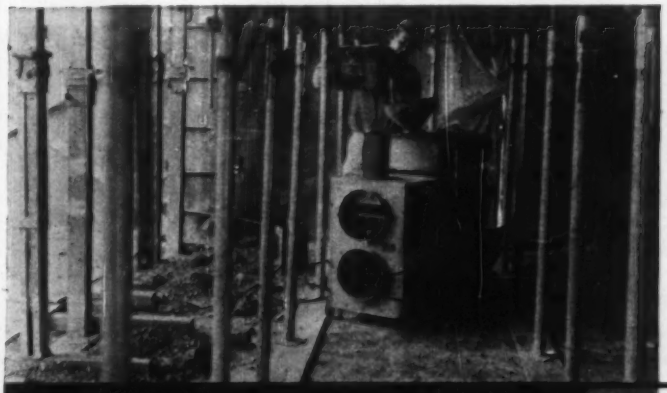
Unit and Ratio Costs Supplied through the Courtesy of George F. Driscoll Co., New York City, Henry C. Beck Co., Dallas, Dewey A. Hicks, Amarillo, Tex., Fred W. Entenman, Inc., Toledo, Ohio, Blitman Construction Corp., New York City, Harmon Construction Co., Oklahoma City, Okla.

TYPE OF: Building	Circular Bank	Office Bldg.	Auto Parts Supply Depot	Hospital	Idlewild Hotel	Motel	Apartment Houses		
Construction: frame	Reinf conc	Concrete	Steel	Steel	Reinf conc	Brick & Wood	Stl. Cols-Conc Lift Slabs	Steel	Concrete
outside walls	Brick	Metal-Glass Curtain Walls, 3 sides	Insul. Alum. Front Brick 3 sides	Brick	Brick	Brick	Brick & Curtain Wall	Brick	Concrete
Date construction started	Nov. 1957	June, 1957	Nov. 1956	Mar. 1957	Jan. 1957	1958	Aug. 1958	Jan. 1957	Oct. 1958
Location, city	Brooklyn, N. Y.	Dallas, Tex.	Atlanta, Ga.	N. Y. C.	N. Y. C.	Amarillo, Tex.	Sylvania, Ohio	N. Y. C.	Little Rock, Ark.
SIZE OF BUILDING:									
Height, stories	2 & basement	19	1	11	6 & basement	2	7	20	9
Floor area, sq ft	25,850 sf	200,609 sf	239,023 sf	278,500 sf	164,000 sf	68,000 sf	95,000 sf	505,000 sf	101,801 sf
Volume, cu ft	423,000 cf	2,336,000 cf	5,461,253 cf	3,302,200 cf	1,852,000 cf	544,000 cf	983,000 cf	5,554,267 cf	954,657 cf
% air conditioned	100%	100%	9.8%	60%	100%	95%	0%	*100%	100%
RANGE of COST of this type of building		Min. Avg. Max. Actual	Min. Avg. Max. Actual	Actual		Min. Avg. Max.	Min. Avg. Max.	Min. Avg. Max.	Actual
Cost $ per sq ft	.....	$11.00 $13.50 $16.00 $12.07	$9.00 $11.00 $13.00 $11.62	$26.72		$7.00 $8.60 $11.00	$17.00 $20.00 $24.00	.....	$12.92
Cost $ per cu ft	.....	....	....	$2.25		$.88 $1.07 $1.38	$1.65 $1.90 $2.25	$1.15 $1.20 $1.30	$ 1.38
Cost $ per unit of capacity	.....	....	....	.....		Apt.	$9,500 $11,000 $13,500 Rm	$4,000 $4,500 $5,000 Apt.	$9,969
Unit of capacity	.....	.....	.....	.....	320 Rooms	140 units	171 Apts.		132 Apts.
ENR BUILDING COST INDEX (1913=100)	517	504	500	501	502		526	502	537
PRINCIPAL ITEMS OF COST					% of Total Cost				
Excavation and Site	2.52	1.82 b	10.60 n	6.92	3.39	2.9	$64,900 4.05	1.73	5.5
Foundations		1.69 c	2.68			4.6	42,800 af 2.67	0.87	4.4
Structural Frame	22.21	20.77	21.50 p	9.95	17.52	3.0	56,700 ag 3.54	19.90	20.00
Cement Finish Work	.....	1.13	2.28 q	10.05 v	.....	.....	211,500 ah 13.20	14.25 ap	1.4
Exterior Masonry	13.20	3.73	3.59	12.45 w	5.21	10.6	109,100 6.81	8.76	.....
Metal Wall Panels	.....	9.70 d	1.89	.....	.....	.....	178,800 aj 11.16	.....	.....
Interior Partitions	In Masonry	In Lath & Plaster e	1.49	In Ext. Partitions	In Masonry	5.0	146,200 9.11	In Exterior Masonry	1.5 at
Carpentry and Millwork	0.44	1.12	0.23	2.71	3.15	22.4	25,400 1.58	1.89	2.5
Sash and Glazing	0.45 a	9.31 f	1.74	1.60	1.40 a	1.5	In Curtain Wall	2.05	2.9
Doors	.....	In Hollow Metal	In Millwk & Hollow Met Wk	0.05 x	.....	In Millwork	38,200 ak 2.38	1.06 aq	In Millwork
Roofing	1.50	0.73 g	5.17 r	1.37 s	0.90	2.1	18,000 1.12	0.06	0.7
Insulation	In Roofing	.....	In Roofing	0.36 aa	0.31	1.1	.....	0.02	In Roofing
Water & Dampproofing	0.70	0.31	0.43	0.70	0.32	.....	1,300 0.08	0.01	0.2
Metal Lath, Furring, Plaster	3.78	4.04	0.34	2.92	5.50	.....	In Interior Partitions	8.25	11.2 av
Hollow Metal Work	0.79	0.58	0.21	3.02 ab	1.90	0.5	In Doors & Frames	In Doors & Metal Bucks	2.6
Misc. Iron & Ornamental Metal	8.71	1.32	3.29 s	2.89	8.04	0.3	23,000 1.44	0.95	1.2
Tile, Terrazzo and Marble	2.85	1.80	0.27	2.20	2.48	4.2	40,600 2.53	2.78 ar	2.4
Floor Covering	0.88	0.10 h	0.17	0.77	0.10	Owner furnishes	15,700 0.98	2.48	2.2
Painting	0.98	0.77 h j	1.91	2.11	1.09	4.9	34,300 2.14	1.00	2.2
Finish Hardware	0.69	0.39 h	0.21	1.14	0.70	0.7	23,100 1.44	0.38	0.8
Acoustical Ceilings	1.07	2.17 k	0.61	1.95 ac	0.50	0.1	7,000 0.43		In Plaster
Plumbing	3.92	21.68	6.85	9.15	14.4	7.70	123,300	7.40	24.6
Heating, Vent. & Air Condition	9.82		14.50	15.30	18.20	10.4	151,000 9.43	8.15	
Elec Work & Light Fixtures	7.97	10.26 m	13.15	10.66	13.95	9.8	126,000 7.87	5.40	7.4
Elevators	2.06	14.87	.....	2.76 ad	2.82	.....	64,800 4.04	4.20	4.2
Intercom Systems & Television	.....	.....	1.39 t	.....	.....	Owner furnishes	.....	0.24	.....
Kitchen Equipment	1.32	.....	0.57	.....	2.23	Owner furnishes	72,800 4.55	3.40	.....
Vaults	7.07	.....	.....	.....	.....	.....	.....	.....	.....
Signs	0.76	.....	.....	.....	0.25	.....	.....	.....	.....
Toilet Partitions & Access	.....	0.47	.....	.....	0.62	.....	.....	.....	.....
Chutes	.....	0.24	.....	.....	0.12	.....	3,100 0.20	In Miscellaneous	.....
Metal Toilet Partitions, Shelves & Lockers	.....	.....	.....	0.81	.....	.....	.....	.....	.....
Sprinklers	.....	.....	3.61	0.17	.....	.....	.....	.....	.....
Ash Hoist, Scales, Linen Chute	.....	.....	.....	0.17	.....	.....	.....	.....	.....
Phar. & Lab. Equipment	.....	.....	.....	0.12	.....	.....	.....	.....	.....
Conveyor System	.....	.....	5.95	.....	.....	.....	.....	.....	.....
Elevated Water Tank	.....	.....	1.32	.....	.....	.....	.....	.....	.....
Dock Leveler	.....	.....	0.78	.....	.....	.....	.....	.....	.....
Swimming Pool	.....	.....	.....	.....	1.5	.....	.....	.....	In Misc.
Miscellaneous	0.31	.....	0.12 u	.....	0.15	.....	24,400 am 1.55	4.77 as	2.1 aw

** Total Cost $1,315,950

a Glazing only
b Incl $5,963 for demolition
c Inc underpinning adjoining bldg
d Metal, glass curtain wall
e No tenant partitions included
f Mostly in curtain wall work. Inc store front work
g Inc sheet metal
h No tenant areas
j Inc special wall covering
k Inc tenant areas
m Inc fixtures and outlets, tenant areas
n Inc RR siding
p Inc slabs on grade & metal roof deck
q Inc 1" traprock floor topping
r Inc 4" perlite fill
s Inc overhead doors
t Pneumatic tube system
u Metal lockers
v Inc concrete work
w Incl interior partitions, stone, T.C.
x Vault, overhead & folding
z Inc sheet metal
aa Inc x-ray protection
ab Inc metal cabinets & partitions
ac Perf mel, grid & plastic
ad Inc dumbwaiters
af Inc caissons
ag Steel struct cols & other stl
ah Framing conc slabs & lifting
aj And curtain walls
ak Inc frames
am Alum entrances, medicine cabinets, landscaping, drape tracks
ap Inc arches. All concrete
aq Metal & bucks
ar And granite
as Mail chute, rolling doors, venetian blinds & general
at Masonry
av Partitions
aw Metal cabinets
* Exc kitchens & baths
** Inc swim pool, rental area & storage

$45 MILLION NUCLEAR POWER PLANT gets the best in portable heat from Herman Nelson units. Located 50 miles southwest of Chicago, the plant is being built by General Electric for Commonwealth Edison and six other large utilities. Bechtel Corp. is the engineer-constructor. Heaters are in use 24 hours a day, seven days a week, for curing the concrete.



count on

HERMAN NELSON

PORTABLE AIR HEATERS

. . . everybody else does!

15° BELOW ZERO kept Herman Nelson heaters at work supplying safe heat for building the Sparrow Hospital annex, Lansing, Mich. Contractor is Reniger Construction Company.

DRYING OUT BIG MOTORS, preheating and thawing equipment, are jobs that call for safe Herman Nelson Portable Heaters at Penn-Dixie Cement's West Des Moines plant.

Get Free Contractors Weather Forecast Service

AAF

AMERICAN AIR FILTER COMPANY, INC.
Portable Products Dept. 27 • Louisville 8, Ky.

Rush complete literature on portable heaters. Also send your monthly Weather Forecast Chart, at no cost.

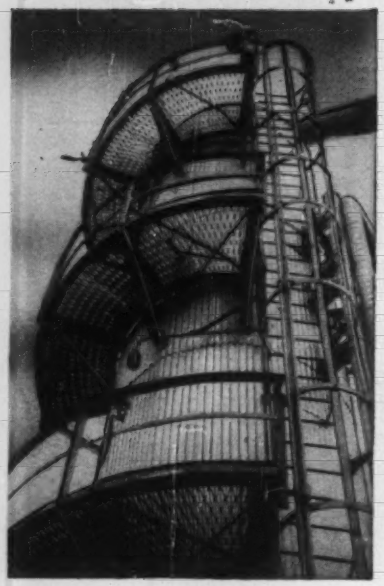
NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

RAIN OR SNOW CAN MAKE CATWALKS DANGEROUS



Walkways, catwalks and treads made of solid wood, metal or other material can collect snow, rainfall, grease or oil and become dangerously slippery.

But these walking surfaces, made of an open mesh of metal bars on edge, cannot collect these substances, leaving the surface always clean, dry and tractional for safer access to high places.

As founders of the grating industry, the Irving Company can draw upon over half a century of experience to supply you with quality grating products for catwalks, treads and other practical and economical uses.

"A FITTING GRATING FOR EVERY PURPOSE"

Write for our General Grating Catalog.

IRVICO

IRVING SUBWAY GRATING CO., Inc.
ORIGINATORS of the grating industry

Offices and Plants at
5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 23, CALIFORNIA

Fourth Quarterly Round up:

Where School and Dormitory Dollars Go

DORMITORY IN SPOKANE, WASH., to house 160 students on 4 floors, costs $4,017 per student.

Unit Ratio Costs Supplied through the Courtesy of Eugene Simpson & Bro., Alexandria, Va., and Johnson-Busboorn-Rauh, Spokane, Wash.

	Jr. High School	Youth Center Reform School	Dormitory
TYPE OF: Building	Jr. High School	Youth Center Reform School	Dormitory
Construction: frame	Conc & Steel	Misc. — 18 Bldgs.	Concrete
outside walls	Brick	Brick	Brick
Date construction started	Feb. 1958	Sept. 1958	Oct. 1958
Location, city	Arlington, Va.	Lorton, Va.	Spokane, Wash.
SIZE OF BUILDING:			
Height, stories	1-2	1-3	4
Floor area, sq ft	149,710 sf	180,000 sf	36,500 sf
Volume, cu ft	2,483,520 cf		308,872 cf
% air conditioned	0%	0%	0%

RANGE OF COST OF THIS type of building:	Min	Avg	Max	Actual			
Cost $, sq ft	$15.00	$15.80	$18.00	$15.80 a			
$, cu ft	0.90	1.00	1.15	0.95 a			
Cost $, unit of capacity				$2,490/pupil a	$7,758/persons a		$4,017/student
Unit of capacity				950 pupils	500 persons		160 students
ENR BUILDING COST INDEX (1913=100)				516	535		500

PRINCIPAL ITEMS OF COST	Cost	% of Total Cost a	% of Total Cost b	Cost	% of Total Cost a	% of Total Cost b	Cost	% of Total Cost
Excavation & Site Improvements	$69,000	2.92	2.87	$328,011 c	13.61	13.38	$10,483	1.63
Foundations	91,000	3.85	3.78	46,000	1.19	1.17	42,000	6.53
Structural Frame	490,000	20.71	20.35	485,000	12.50	12.29	121,508	18.90
Cement Finish Work	10,000	0.42	0.42	5,000	0.13	0.13	15,001	2.33
Exterior Masonry	120,000	5.07	4.98	220,000	5.67	5.57	40,325	6.27
Metal Wall Panels	33,000	1.39	1.37	.....	.....	.....	.....	.....
Interior Partitions	217,000	9.17	9.01	243,000	6.26	6.16	.....	.....
Carpentry and Millwork	89,000	3.76	3.70	141,000	3.63	3.57	76,323	11.88
Sash and Glazing	78,000	3.30	3.25	149,000	3.84	3.78	25,848	4.02
Doors	20,000	0.85	0.83	46,000	1.19	1.17	2,800	0.44
Roofing	74,000 d	3.13	3.07	169,000 e	4.36	4.28	17,899	2.79
Insulation	16,000	0.68	0.67	7,000	0.18	0.18	3,811	0.59
Waterproof & Dampproofing	23,000	0.97	0.95	2,000	0.05	0.05	.....	.....
Metal Lath, Furring, Plaster	37,500	1.59	1.56	149,000	3.84	3.78	20,343	3.17
Hollow Metal Work	27,000	1.14	1.12	21,000	0.54	0.53	16,288	2.53
Misc. Iron & Ornamental Metal	64,000	2.71	2.66	70,000	1.80	1.78	21,729	3.38
Tile, Terrazzo & Marble	44,000 f	1.86	1.83	39,000	1.01	0.99	19,232	2.99
Floor Covering	16,000	0.68	0.66	21,000	0.54	0.53	7,397	1.15
Painting	26,000	1.10	1.08	51,000	1.31	1.29	18,410	2.87
Finish Hardware	30,000	1.27	1.25	42,000	1.09	1.06	5,950	0.93
Acoustical Ceilings	54,000	2.28	2.24	7,000	0.19	0.18	4,190	0.65
Plumbing	127,000	5.37	5.27	220,000	5.67	5.57	113,637	17.68
Heat Ventilation	262,000	11.07	10.88	390,000	10.05	9.88		
Electrical Work & Lgt Fixt.	167,500	7.08	6.96	300,000	7.73	7.60	36,136	5.62
Elevators	.....	.....	.....	.....	.....	.....	23,437	3.65
Power Plant (inc Distr)	.....	.....	.....	375,000	9.67	9.50	.....	.....
Intercom Systems & TV	5,500	0.23	0.23	.....	.....	.....	.....	.....
Classroom Equipment	78,000	3.30	3.24	.....	.....	.....	.....	.....
Gymnasium Equipment, etc.	52,000	2.20	2.16	123,000	3.17	3.12	.....	.....
Jail	.....	.....	.....	20,000	0.52	0.51	.....	.....
Lockers, etc.	45,000	1.90	1.87	10,000	0.26	0.25	.....	.....
Miscellaneous	121	.....	.....	.....	.....	.....	.....	.....
Overall Cost							$642,747	
Exc Rough Site Grading	$2,365,621	.....	.....	$3,879,011	.....	.....	.....	.....
Rough Site Grading	42,000	.....	1.74	68,000	.....	1.70	.....	.....
Inc Rough Site Grading	$2,407,621	.....	.....	$3,947,011	.....	.....	.....	.....

a Exc rough site grading
b Inc rough site grading
c Large site
d Inc. $40,000 gypsum roof
e Inc $45,000 gypsum roof
f Inc exterior decorative stone

check these HENDRIX features...

BONUS LOADS

LESS MAINTENANCE

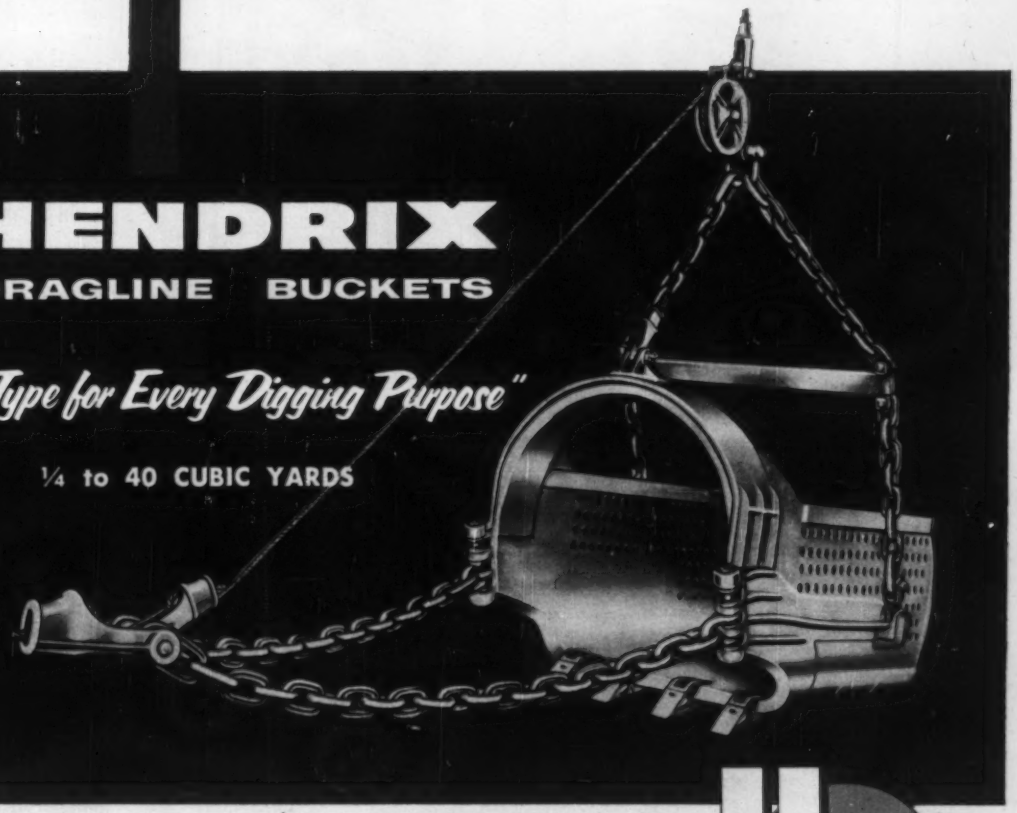
EXTRA PROFITS

- ✓ LESS BUCKET WEIGHT, for greater capacity.
- ✓ ALL-WELDED CONSTRUCTION for greater strength and durability.
- ✓ 14% MANGANESE STEEL chains, fittings and reversible tooth points.
- ✓ PERFECT PERFORMANCE . . . easier handling . . . faster loading . . . cleaner, smoother dumping.

HENDRIX
DRAGLINE BUCKETS

"A Type for Every Digging Purpose"

¼ to 40 CUBIC YARDS

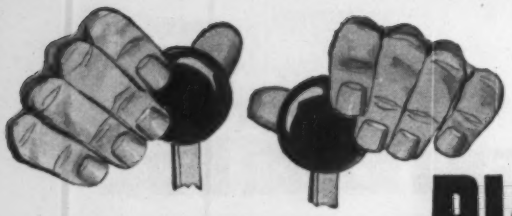


All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

Hendrix Lightweight Dragline Buckets

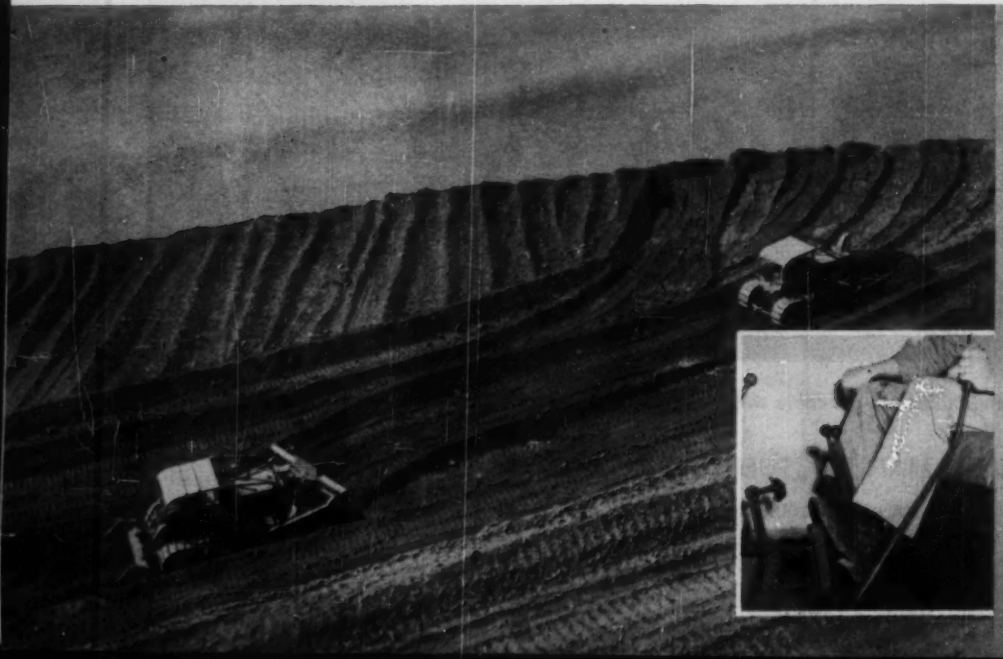


Your operators' fingertips can control this greater dozing capacity

Planet-Powered "24's"

UNMATCHED FOR BENCHING, SIDE-CASTING

The TD-24 outproduces comparable crawlers on benching or side-casting without "nosing" into the bank, loss of working speed or traction—despite side-draft of offset load. TD-24 operator counteracts rear-end "slueing" by operating the load-side track in high speed-range while keeping the outside track in low range. This exclusive, separate, power-on-either-track feature provides bonus-load *follow-through*. Operators of king-size steering-clutch crawlers, by contrast, must release the steering clutch on the outside track to keep tractor pushing forward. This kills half the productive power and traction!



CYCLE SHORTENING FASTER REVERSE SPEEDS

Faster reverse speeds let the TD-24 operator cut cycle time and boost production on shuttle-dozing, especially on long pushes. At the end of the pass, TD-24 operator depresses the decelerator pedal, and quickly shifts to a fast reverse speed. As he highballs back for another pass, he uses Hi-Lo planetary shifting as needed to speed repositioning the "24" for the next pass.

doze up to 50% more paydirt!

With two-finger ease your operators can hand you a paydirt dozing dividend of up to 50%, on International TD-24 crawler tractors. Exclusive Planet Power steering, plus fast reverse speeds up to 7.5 mph, arm the TD-24 operator to outblade steering clutch competitors by amazing margins!

Benching, bank-cutting, side-casting, or blading around the curve, the TD-24's dozer keeps cutting—keeps paydirt on the move—doesn't spill the extra-profit margin with "jerky" steering. Planet Power steering gives your operator full-time "live" power on both tracks—eliminates load-losing, power-wasting "dead-track drag" in turns—clips vital minutes from shuttle-dozing cycles!

Your operator "pours on" full-load power by shifting the TD-24 into first gear and flicking steering levers into low range. Two fingers can then instantly power-shift the Hi-Lo planetary into load-matching high range!

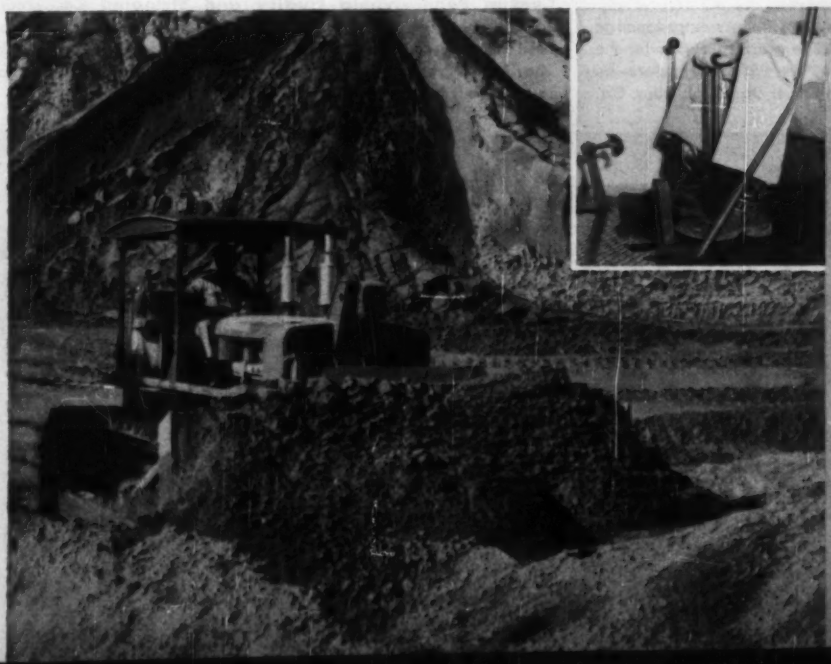
At the end of the pass, your TD-24 operator presses the engine decelerator for quick-shifting to fast reverse, zips back for another pass. Hi-Lo planetary levers give two separate speeds in any forward or reverse gear selected!

Prove to yourself how your operators can boost dozing dividends at the controls of Planet-Powered "24's." And measure the production advantages of "24's" as pushers or pull-type scraper power. Call your International Construction Equipment Distributor for a demonstration!

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.



PAY-OFF STRAIGHTAWAY PUSHES

This whopping bladeful of wet sand is dozed fast by the TD-24 operator who: 1) shifts on-the-go into first gear forward, by using the synchro-mesh transmission; and 2) utilizes instant-shift Hi-Lo planetary system of flicking levers into low-range position. As load lightens, operator power-shifts into high-range position, increasing working speed 27%! Decelerator pedal provides for "no-hands" slow-ups!

These are the profit-proven that lead to Payhauler® fleet

Look into the rock-lugging, grade-beating 24-ton "95"...

- **Bonus-powered,** with a 335 hp high-torque turbo charged diesel engine to beat steep grades and high altitudes with full payloads!
- **Your choice of torque converter** with powershift, or 9-speed constant mesh transmission. Speeds to match every load and road.
- **Shock-cushioning** of planetary drive axles.
- **Massive frame stamina**—with 277 lbs. of high-strength, shock-resisting steel for each rated ton of carrying capacity.
- **Springs with extra leaves** and **extra length** to cushion the payload, smooth the ride.
- **Positive power-steering, Torqmatic braking,** panoramic vision, for unmatched operating ease and load-speeding safety.
- **Up to 25% higher hauling speeds**—the "95" can high-ball, fully loaded, up to 38 mph.
- **Faster reverse speeds**—for spotting to load, or positioning full loads for dumping. The gear-drive "95" can travel up to 7.1 mph. in reverse.
- **9-second dumping**—another cycle-speeding feature.

...and the 250-hp, 18-ton "65" has equally outstanding features.

International® Construction Equipment

International Harvester Co.
180 North Michigan Ave., Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

Power for steep grade climb-outs wins steady job for five "65's"

Bonus Turbo Charged Diesel power to deliver extra-tonnage loads up a haul road with a 17% average grade accounts for the dependence of Caldwell Engineers on five "65" Payhaulers—on the $13 million hydro and flood-control Oliver Dam, Columbus, Ga.

Contractor doubles load delivery speed with positive Torqmatic braking!

Central Pennsylvania Quarry and Stripping Co. credits *Torqmatic braking* of their 5-unit "95" Payhauler fleet with doubling load delivery speed—by increasing safe downhill hauling speeds! They've compared "95's" directly to other off-road equipment on rock-hauling duty!

features ownership!

Prove what it means to command the Payhauler ratio of power to payload—for hauling up to 25% faster; beating grades and altitude. Try Payhauler "pick-up-truck" spotting ease—"zip-around" power steering—exclusive high reverse—and all the other Payhauler advantages. See your International Construction Equipment Distributor for a demonstration!

High-percentage availability proves inbuilt stand-up-ability!

98.5 work availability through one measured 12-week period is the mark set by a 10-unit "95" Payhauler fleet—high-balling rock over steep High Sierra grades, on mammoth Pool Hydro Project, for Southern California Edison Co. Such records result from reserve power, reserve frame and transmission strength, and reserve shock-resistance!

Another thirty "95" Payhaulers join Merritt-Chapman and Scott fleet!

Merritt-Chapman and Scott Corporation has added thirty more "95" Payhaulers to their Niagara Power project equipment spread. Now, the M-C and S Payhauler fleet totals 62 units—largest in the world! On St. Lawrence Seaway, huge Glen Canyon dam, and Niagara Power Project, M-C and S have proved rock-lugging, grade-beating Payhauler performance—and confirmed their satisfaction with repeat orders.

HOW A CLAM-ACTION 4-IN-1 *obsoletes "straight bucket" rigs* ...ON JOBS LIKE THESE!

In quarters too narrow to maneuver, simply use the 4-In-1's clamshell action. You can load loose materials without moving the tractor with a fast, one-gulp clam-fill. Even on jobs like clean-up, you get the advantages of a big-capacity outfit; practically eliminate the need for costly hand labor. Move the "machine-selector" lever with 2-finger ease, to get clamshell, or any other 4-In-1 action! Fessenden and Co., El Curito, Calif., owns this TD-9 4-In-1!

Back-dragging with clamshell action, this TD-9 4-In-1 dredges silt from under a new bridge while a big boom-type clamshell is forced to stand idle in the background. The operator can also use back-drag action along with powerful Skid-Shovel excavating action to speed this job in tough digging. "The 4-In-1 is the best money-saver the county has," states Art Hahn, Colfax County, Nebraska, commissioner. "For ditch clean-up or culvert work, you can't beat it."

Grading with back-drag motion, this TD-9 4-In-1 is shaping a bank ahead of landscaping and paving around a new filling station. "The 4-In-1 can cut such a fine grade we don't need to follow-up with a grader," reports Ray Sims, for Meridian Pavers, Seattle, Washington. "It digs and loads faster than any comparable unit, takes out concrete slab, enables us to take on work an ordinary loader can't handle."

Try versatile International Drott 4-In-1 clamshell action from back-dragging to grading or excavating—to clean-up in tight quarters or for speedy stockpile loading. Then try super powerful 4-In-1 pry-over-shoe break-out action. Lift the clam lip (hydraulically) and see what big-capacity dozing you command—with 4-In-1 dozer action. Prove to yourself that 4-In-1 clamshell action obsoletes any old-fashioned "straight bucket" loader on the market. See your International Drott Distributor for a demonstration.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL HARVESTER

INTERNATIONAL DROTT

2-Shift, 7-Day Work Schedule Priced for . . .

Air Force Base Alert Apron

Two 10-hour shifts, to be worked 7 days a week to meet the 6-month completion schedule, dominated the bidding for this operational alert apron at the Seymour Johnson Airforce Base in Goldboro, N. C. for the Corps of Engineers, Wilmington, N. C.

L. M. Stephenson is chief of the Construction Division.

The $1,379,872 award to Nello L. Teer Co., Durham, N. C., is 5.3% below the engineer's estimates and 18.1% below the high of four bids.

The main stem apron will be 2,000 ft long, with a taxiway 100 ft wide. Each of the eight parking stubs will be 350 ft x 100 ft.

Approximately 210,000 cu yd of unsuitable material and a like amount of backfill will have to be removed. The construction area has a heavy clay subsoil, with a high water table, requiring that the area be undercut to a depth of 6 ft during the wet winter months, and possibly during the normally dry summer months.

The contractor must exhaust approximately 128,000 cu yd of suitable on-site borrow material before borrow commences on off-site pits. At no extra cost, he must raise the level on the on-site pits to the existing natural grade in the area, with material stripped from the pits. He must also provide a 400-ft-dia ammunition burning area.

Rail and truck transportation may be utilized. The railroad is half a mile from the site.

Minimum wages include: carpenter, $1.65; tractor operator, including bulldozer, $1.60; power crane and shovel operator, $1.60; motor grader, $1.60; common laborer, $1.00.

The four bids included:

1C Nello L. Teer, Durham, N. C.	$1,379,872
2 W. H. Scott, Inc., Franklin, Va.	1,397,320
4 Ballenger Paving Co., Inc., Greenville, S. C.	1,885,240
EE Corps of Engineers, Wilmington, N. C.	1,457,734

Bids: 10-23-58 Items	Unit	Quantity	Unit Prices 1C	2
Surcharge fill matl, remov & stockpile	cy	20,000	$0.40	$0.32
Excavation, common	cy	21,000	0.40	0.43
unsuitable material	cy	210,000	0.65	0.73
Borrow, on site	cy	128,000	0.75	0.58
off site	cy	193,200	1.15	0.79
Base crse, stab agg, 8"	sy	14,400	1.29	1.35
graded cr agg, 6"	sy	49,400	0.98	1.30
Subbase course, 6"	sy	47,400	0.45	0.48
Prime coat	gal	22,300	0.17	0.19
Tack coat	gal	11,200	0.17	0.16
Asph conc surf course	t	6,700	5.35	5.65
Bituminous material	gal	92,100	0.09	0.14
Port cmt conc pavement, 20"	sy	47,400	9.49	10.05
6"	sy	7	7.00	6.00
Combination curb & gutter	lf	1,180	2.40	2.12
Pavement markings paint	ls	job	2,000	4,800
Tie down anchors	ea	182	4.50	8.00
CRD, 6 facilities	ls	job	9,000	9,000
Fence, chain link	lf	5,820	2.70	2.70

Bids: 10-23-58 Items	Unit	Quantity	Unit Prices 1	2C
Gate, double slide	ea	1	$500.00	$ 1,160
Taxiway lighting system	ls	job	10,000	15,900
Elec distribution system	ls	job	56,500	33,900
Water pipe, 8"	lf	3,230	3.80	4.75
6"	lf	5,885	2.95	3.70
2½"	lf	5	4.25	3.45
gate valve & box, 8"	ea	1	175.00	127.00
Gate valve & box, 6"	ea	18	100.00	100.00
2½"	ea	1	60.00	69.00
Fire hydrant	ea	14	200.00	200.00
Conn to exist water main	ea	2	110.00	265.00
Encasement, pipe, 19"	lf	380	4.25	16.00
Wat line, 3", lower existing	lf	100	1.65	5.30
Sanitary SP, gravity, 8"	lf	300	3.25	3.70
4"	lf	45	2.25	3.20
stub, gravity, 6"	lf	5	4.25	3.20
force main, 4"	lf	2,425	2.35	3.40
San sew, gate vlv & box, 4"	ea	1	90.00	80.00
manhole, standard	ea	1	200.00	105.00
security grills for existing structures	ea	2	60.00	320.00
MH w/bar screen, std.	ea	1	275.00	210.00
MH, lower existing to grade	ea	1	125.00	80.00
Conn to existing sanitary sewer diversion box	ea	1	60.00	105.00
Sewage pump station, compl	ls	job	4,200	6,100
Seeding, permanent cover	ac	42	160.00	200.00
temporary cover	ac	42	50.00	150.00
Sprig & overseed	ac	42	175.00	475.00
Nitro, follow-up fertilizer	ac	42	32.00	32.00
Mulch	ac	4	200.00	190.00
Reinf conc or cor met storm drain pipe, 66"	lf	165	65.00	52.30
54"	lf	1,550	34.00	36.10
48"	lf	585	26.00	28.75
42"	lf	840	22.00	24.45
36"	lf	840	17.50	18.45
30"	lf	185	14.50	12.25
24"	lf	535	13.00	11.10
18"	lf	325	10.00	7.10
15"	lf	225	6.00	6.40
12"	lf	1,165	5.75	5.75
48" w/flex watertight joints	lf	120	37.50	37.10
Reinf conc, drain structs	cy	75	100.00	160.00
Conc, plug encasement & headwall #32	cy	22	75.00	100.00
Pave, conc ditch & headw, 6"	sy	250	7.00	16.00
CI frames & grates, 2'x2'	ea	41	35.00	70.00
manhole frames & covers	ea	4	50.00	42.50
Security grills for 66" storm drain pipe, sloping headwall	ea	2	175.00	750.00
headwall #32	ea	1	165.00	415.00
54" pipe, sloping headwall	ea	1	145.00	405.00
24" pipe, sloping headwall	ea	1	85.00	370.00
Excavation, ditch	cy	8,000	0.65	1.06
RC culv pipe, 48" remov	lf	30	8.00	6.35
18" remov	lf	30	4.00	4.25
15" remov	lf	35	4.00	3.70
12" remov	lf	60	4.00	3.20
Sheathing & bracing, left in	bf	2,000	0.20	0.16

Start: 11-20-58 Complete 5-30-59

Earthfill Dams to Retard Oklahoma Floodwaters

To control floodwaters in Wewoka Creek Water and Soil Conservancy District #2, the Soil Conservation Service awarded two contracts totaling $47,941. John Geter, Wewoka, is the engineer.

The award to Baker Construction Co., Lindsay, Okla., is 4.5% below the engineer's estimate. It includes two upstream floodwater retarding embankments on Big Wewoka Creek in Seminole County. The first of these, 1,400 ft long and 22 ft high, will require 60,100 cu yd of earthfill embankment. The second, 800 ft long and 23 ft high, will require 48,350 cu yd. The contract price on placing and rolling embank-

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Typical **WELD-CRETE** Applications

GRANVILLE ST. BRIDGE, VANCOUVER, BRITISH COLUMBIA—One of the largest 8 lane bridges in North America. Here Weld-Crete was applied to bridge surface to bond cement dividing strips. Now, over 4 years later, bonds are as good as new. *General Contractor:* Dominion Bridge Company.

SEVEN CORNERS SHOPPING CENTER, FALLS CHURCH, VIRGINIA—During construction of this 600,000 sq. ft. structure, initially only part of floor was poured and floated to a smooth finish. Areas in which show windows would be added were poured as base slab only. Slab was coated with Weld-Crete. After store fronts were custom-built, delayed toppings of 1" to 1½" thick were poured with assurance of permanent bond to base slab. These toppings were then finished with asphalt tile, wood, or finish flooring of lessee's choice. Designed and constructed by The Kass Realty Co. of the Kass-Berger Organization under direction of J. Franklin Groff. *Concrete Contractor:* Moses-Ekco.

. . . Oklahoma to retard flooawaters

ment was 23¢ a cu yd compared with the high bid on this item, 25¢.

Contract prices for excavation ranged from $0.12 per cu yd in emergency spillway, to $1.00 per cu yd of wet cutoff trench and channel excavation.

Class A concrete must acquire a compressive strength of 2,000 psi in 7 days, 3,000 psi in 28 days. Class B must acquire a compressive strength of 1,300 psi in 7 days, and 2,000 psi in 28 days.

The contractor furnishes all materials.

Wages on the job include: tractor operators, $2.05; common laborers, $1.00.

	Site #8	Site #12
1C Baker Constr, Co., Lindsay, Okla.	$25,231	$22,710
2 H.S.&B. Contractors, Wewoka	26,766	24,790
3 B & M Pipeline & Dozer Service, Okemah, Okla.	31,916	29,732
EE Soil Conservancy Service, Wewoka	24,532	25,684

Bids: 9-24-58 Items	Unit	Quantity Site #8	Site #12	Unit Prices 1C	2
Timber . . . . . clear	ac	16	9.2	$150.00	$175.00
Excavation, common					
cutoff trench, dry	cy	5,591	. . . . .	0.18	0.25
dry	cy	. . . . .	8,180	0.15	0.25
wet	cy	1,029	. . . . .	0.90	1.00
wet	cy	. . . . .	600	1.00	1.00
emer spillway, dry	cy	5,570	4,590	0.12	0.20
stream chann, dry	cy	470	. . . . .	0.20	0.30
wet	cy	. . . . .	370	1.00	1.00
drain channel, dry	cy	650	770	0.20	0.25
Embankment . . p&r	cy	60,100	48,350	0.23	0.23
Topsoil, emer spillway . . . s&p	sy	4,830	5,600	0.10	0.10
Concrete, Class A	cy	12.03	13.98	70.00	75.00
class B	cy	19.13	22.22	65.00	50.00
Reinforcing steel	lb	1,202	1,385.78	0.16	0.18
RCP, 17" ID . . . f&i	lf	168	192	9.00	10.00
Sluice gate 18" & cutoff mech . . f&i	ea	1	1	250.00	190.00
Anti vortex baffle . . . . . f&i	ea	1	1	250.00	375.00
Wire fence, new, & 2 gates . . . . . f&i	lf	4,273	2,926	0.33	0.35
Gravel filter blanket . . . . . f&p	cy	. . . . .	365	2.50	4.00

f&i furnish and instal — f&p furnish and place
s&p salvage and place — p&r place and roll

Completion schedule: 127 working days
Liquidated damages: $60/day

Clearing and Grubbing Wins

$405,000 New Mexico contract is for 1.6 miles of grading, drainage and paving in Carlsbad

With the three low bidders running neck and neck on most items, a lump sum bid of $20,000 for clearing and grubbing was $40,000 under the amount bid by the second low for this road job. It took the contract for J. W. Jones Construction Co., Albuquerque, N. Mex.

The $404,969 low bid award by the New Mexico State Highway Department averages $256,147 a mile, almost 9% under the second low and 12.7% below the engineer's estimate. Mann Engineering Co., Roswell, N. Mex. is the consultant.

The work, on 4-lane U.S. Hwy. 285, includes 1,581 mi of grading, drainage, base course, concrete pavement, plant mix, curbs and gutters, street light bases and electrical conduits.

The largest item in the contract, 38% of the total, is for 28,085 sq yd of portland cement concrete pavement. The unit price bid on this item by all but the high bidder was $5.50 a sq yd, the same as the engineer's estimate. High bid on this item was $6.35 a sq yd.

The same three contractors, as well as the engineer, priced 30,614 cu yd of unclassified excavation at $1.00 a cu yd. Low bid on this item was 65¢ a cu yd.

Portland cement concrete pavement must contain not less than 6 sacks of cement per cu yd and must attain a minimum compressive strength of 3,000 psi in 28 days.

The contractor furnishes all materials. Rail and truck transportation are both available. The railroad is three city blocks from the project.

Minimum wages include: carpenter $2.75; concrete finisher, $2.95; cement finisher tender $2.05; form setter $2.05; bulldozer operator $2.65; concrete paving spreader operator $2.85; self-propelled pneumatic roller operator $2.05; steel wheel roller operator $2.65; electrician $3.325; common laborer $1.75.

The four bids included:

1C J. W. Jones Constr. Co., Albuquerque, N.M.	$404,969
2 J. H. Ryan & Son, Inc., Albuquerque, N.M.	443,480
4 Armstrong & Armstrong, Roswell, N.M.	461,620
EE Mann Engineering Co., Roswell, N.M.	463,861

Bids: 10-17-58 Items	Unit	Quantity	Unit Prices 1C	2
Structures . . . . . remov	ls	job	$3,000	$1,040
Clear & grub	ls	job	20,000	60,000
Excavation, uncl	cy	30,614	1.00	1.00
structures	cy	54	3.00	4.00
Watering	Mgal	1,115	0.50	0.50
Rolling, tamp roller	hr	30	12.00	10.00
pneumatic tired	hr	143	6.00	6.00
steel tired	hr	154	8.00	10.00
Roller operation, 50 ton	hr	86	15.00	20.00
Mechanical tamping	hr	81	5.00	6.00
Markers, right of way	ea	30	8.00	10.00
std Fed aid proj, tp III	ea	3	50.00	100.00
Subbase, control gradation	t	5,750	1.35	1.35
Base course	t	14,160	1.35	1.45
Portland cement, tp I	bbl	1,340	5.00	7.00
Cement treated base, cl B	sy	27,111	0.20	0.30
Bit curing seal matl, C-2	bbl	166	8.00	8.00
Emulsified asphalt, AE-3	bbl	100	9.00	10.00
Surface course, plant mix	t	4,750	3.50	5.00
Bit mat, tp 85-100, plant mix	bbl	1,485	7.00	6.75
Conc, cl A	cy	55	100.00	100.00
median, solid slot	cy	1,032	32.00	30.00
median cover	sy	785	4.50	3.25
Reinforcemt, conc structs	lb	1,552	0.20	0.20
Portland cmt conc pavemt	sy	28,085	5.50	5.50
Conc curb & gutter	lf	14,580	1.75	1.90
median curb & gutter	lf	961	1.35	1.50
high early str, val gut	lf	289	2.00	2.20
curb return fillets	sy	214	5.50	4.00
sidewalks	sy	5,178	4.00	3.50
driveways	sy	1,957	6.00	5.00
Bit ctd asb bond corr met syphon pipe, 24"	lf	104	12.50	12.00
Structural steel	lb	2,411	0.50	1.00
Conduits, 2", galv iron	lf	1,450	1.50	1.00
fiber	lf	8,986	1.25	0.30
RR insul #4 cable, std type	lf	21,184	0.20	0.17
Galv iron 90° ells, 2"ø, 9½" radius	ea	6	5.00	5.00

Completion schedule: 225 working days
Liquidated damages: $100/day

(*Unit Prices continued page 90*)

How to turn a swamp into acres of dollars ...with an ELLICOTT DRAGON*

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Concrete

On the Connecticut Turnpike, they paved ... got better night

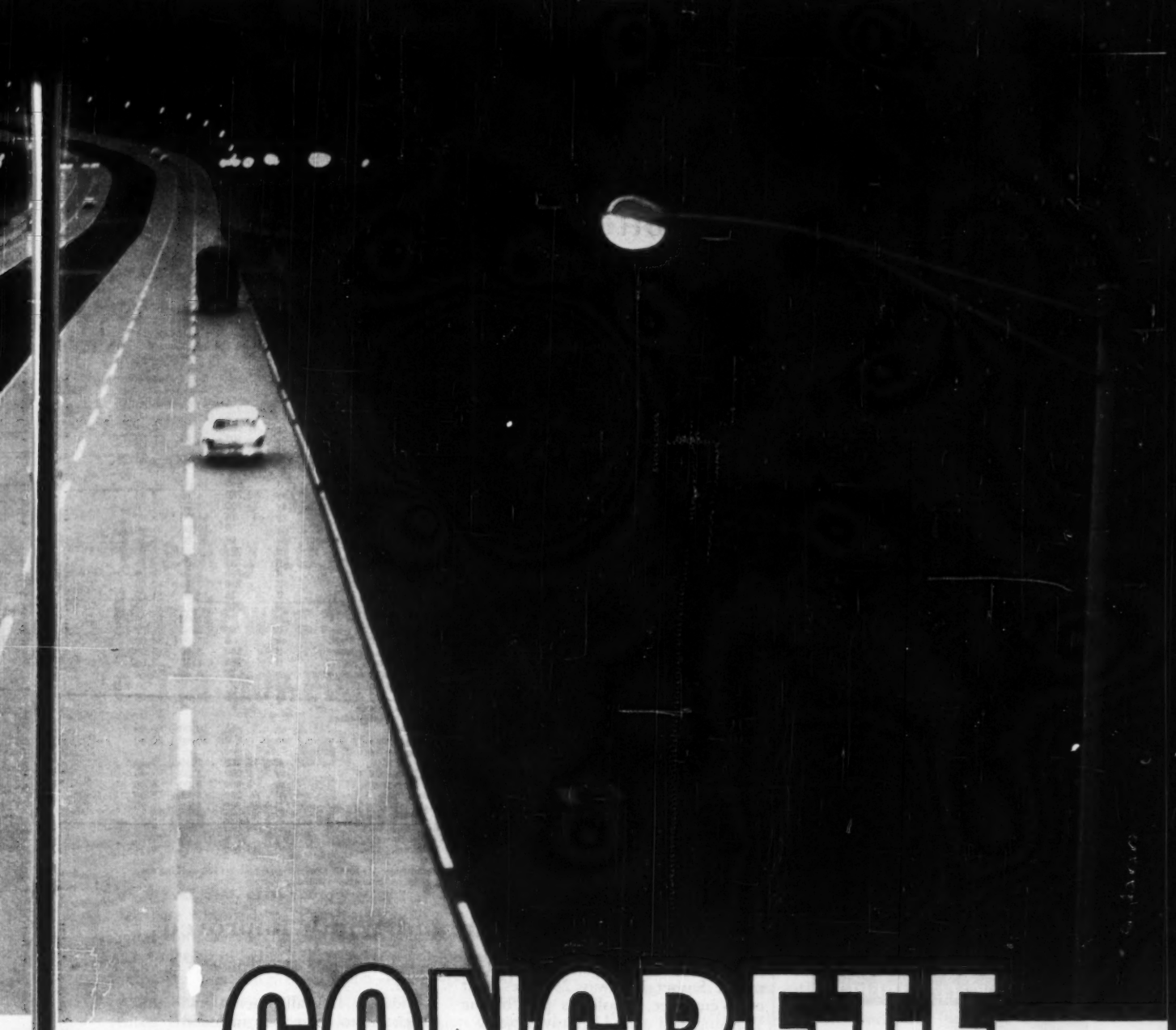
The world's longest lighted highway shows another big advantage you get with concrete.

The extra high night-visibility level all along the heavy-duty, lighted section of the Connecticut Turnpike comes from the very nature of concrete. Where dark-colored pavements absorb light, concrete reflects it.

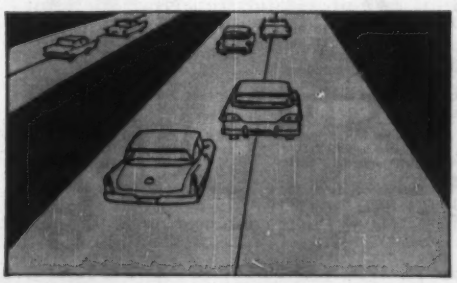
American Standards Association recommendations for standard lighting practice show *lights are twice as effective on high reflectance surfaces, like concrete,* as on dark surfaces. This means you get double the light. Or you can use up to 50% fewer fixtures, still get recommended lighting levels. More important, you cut the electric bill—up to $720 per mile per year.

And lighting is just one example of how modern concrete saves money. Initial cost is moderate—often lower than for other pavements when costs are based on load-carrying capacity. Maintenance cost will run as much as 60% lower than for asphalt. You get a 50-year-plus service life without surface treatments or repaving. Little wonder that concrete is the preferred pavement for heavy-duty roads like those on the new Interstate System.

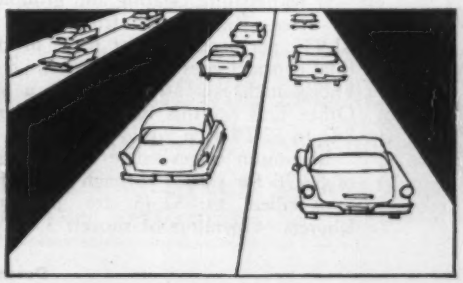
PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*



with CONCRETE visibility at no extra cost!



Traffic pattern that often develops with low light level



Improved traffic pattern on highway with high light level

Better highway visibility improves night traffic patterns. Connecticut Turnpike experience shows that drivers pass freely, don't crowd center lines, don't string out. The traffic capacity of the highway is increased.

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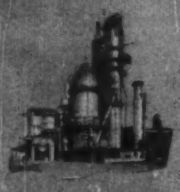

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Traffic and Access Problems Complicate

Charlotte Pavement Widening

Portland cement concrete pavement, at $4.85 a sq yd, accounts for more than half of this $474,869 contract for widening 1.93 mile of roadway in Charlotte, N. Car. to U.S. 29 Bypass.

The award to Blythe Bros. Co., Charlotte, by the North Carolina State Highway and Public Works Commission, Raleigh, is 3.8% below the second and 14% below the high of the six bids. It averages $246,050 a mile. L. A. Brown, Charlotte, is engineer.

The existing pavement will be widened 26 ft on either side. The work includes grading, drainage, placing a 9-in. portland cement concrete pavement on a 4-in. stabilized aggregate base course, and curbs and gutters.

Gaps in the pavement in front of 18 commercial establishments will create problems in the handling of the 7,500 average daily tonnage of traffic which must be accommodated during construction.

Minimum modulus of rupture for concrete is 550 psi at 14 days.

The contractor must furnish all materials except borrow excavation.

Prevailing wages include: carpenters $1.75-$2.00; shovel and crane operators $2.00-$2.25; concrete finishers $1.50-$1.75; tractor operators $1.75-$2.00; common laborers, $1.00-$1.25.

The six bids on this pavement widening included:

1C	Blythe Bros. Co., Charlotte, N. C.	$474,869
2	Southern Roadbuilders, Inc., Augusta, Ga.	493,443
6	Clinchfield Conc. Co., Inc., Kingsport, Tenn.	552,268

Bids: 10-21-58 Items	Unit	Quantity	Unit Prices 1C	2
Clear	ac	3	$250.00	$250.00
Grub	ac	1	125.00	250.00
Exc, uncl	cy	46,000	0.52	0.91
drainage ditch	cy	100	0.90	1.50
Stab agg base course, 4"	sy	64,500	0.65	0.66
	t	200	6.00	2.60
Bit conc surf crse, type F-2, dr. pkg. lot, medians	t	650	10.00	16.00
P cmt conc pave, 9"	sy	56,700	4.85	4.68
isl covers, 3"	sy	700	3.50	2.70
Conc, cl C, endwalls	cy	14	85.00	75.00
steps	cy	2	110.00	90.00
Brick masonry retain walls	cy	10	50.00	65.00
Reinf conc pipe, 15"	lf	4,224	3.25	3.80
18"	lf	1,362	4.00	4.80
24"	lf	736	5.70	7.00
30"	lf	216	7.75	12.00
36"	lf	36	10.50	14.00
42"	lf	216	13.75	18.00
48"	lf	16	17.00	22.00
Bit ctd CMP culv, type B 18"	lf	180	5.00	5.00
elbows, tp B, 18"x30"	ea	8	35.00	30.00
CIP culverts, 4", smooth	lf	500	3.50	3.00
VCP culverts, 4"	lf	500	1.50	3.00
Brick masonry catch basins	cy	78	60.00	65.00
Conc drop inlets & junct boxes	cy	13	75.00	90.00
Grates & frames, brick masonry catch basins	ea	58	50.00	60.00
drop inlets	ea	7	50.00	60.00
Conc comb curb & gutter, 2'6"	lf	17,950	2.10	2.32
sidewalk, 4"	sy	2,000	3.50	3.20
driveways, 8"	sy	3,000	6.00	5.60
Galv stl pipe, ¾"	lf	200	1.25	1.00
1"	lf	200	1.50	1.20
2"	lf	200	2.00	2.00
Conc curb, 8"x6"	lf	4,510	0.60	0.90
cl A culverts	cy	97.6	115.00	67.00
Reinforcing steel	lb	15,560	0.14	0.14

Commence: 11-14-58. Completion schedule: 180 working days
Liquidated damages: $200/day

Forest Highway Grade and Width Improved

This 2.889 mile, 34.5 wide section of the Sunset Highway 25 miles west of Wenatchee, Wash., is part of the Washington Forest Highway project.

The sixteen bidders ranged from a low of $591,848 to a high of $1,147,362. The award to low bidder Goodfellow Bros., Inc., Wenatchee, Wash., averages $204,862 per mile, and is 15.4% below the engineer's estimate and 2.7% below the second bid.

Work is for the Bureau of Public Roads, Department of Commerce, Portland, Ore. L. F. Brown, Leavenworth, Wash., is the engineer.

It will require clearing and grubbing 46 acres. Bids ranged from $500 to $1,935 per acre. Almost 65% of the total contract goes for 446,000 cu yd of unclassified excavation at 86¢ a yd. Other bids on this item ranged from 88¢ to $2.10 a cu yd.

Minimum wages range from a high of $3.76 for skilled through $2.68 for semi-skilled to $2.48 for common laborers. Operators of shovels 3 cu yd and over are paid $3.99, under 3 cu yd, $3.63.

Bids on this alignment, grade and width improvement job included:

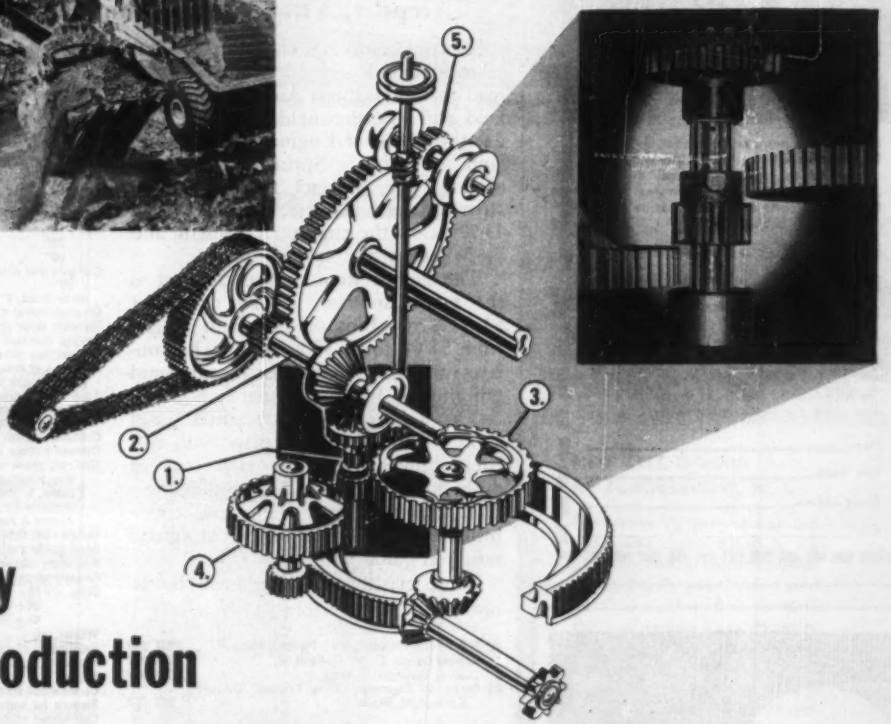
1C	Goodfellow Bros., Inc., Wenatchee, Wash.	$591,848
2	Anderson Steen, Seattle, Wash.	608,000
16	Morrison-Kundsen Co., Inc., Seattle, Wash.	1,147,362
EE	L. F. Brown, Leavenworth, Wash.	699,302

Bids: 11-5-58 Items	Unit	Quantity	Unit Prices 1C	2
Extra & misc work	ls	job	$1,000	$1,000
Clear & grub	ac	46	850.00	500.00
Trees & snags, sel. remov	sf	200	7.00	7.00
Exc, uncl	cy	446,000	0.86	0.93
structural	cy	300	5.00	5.00
arch culverts	cy	1,700	6.00	3.00
Foundation fill	cy	190	8.00	5.00
Overhaul	sta yd	845,000	0.01	0.01
	yd mi	39,000	0.30	0.30
Conc, cl A	cy	264	60.00	75.00
cl X	cy	540	50.00	65.00
arch culvert, 8' bbl	lf	320	92.00	80.00
10' bbl	lf	208	114.20	100.00
11' bbl	lf	180	122.75	110.00
Reinforcing steel	lb	28,000	0.15	0.20
Treated timber irrigation trestle	ls	job	600.00	3,000
Bit ctd cor met pipe, 18"	lf	1,030	5.50	5.00
24"	lf	104	9.00	10.00
36"	lf	68	16.00	15.00
Galv cor MP, irrigat, 18"	lf	320	10.00	8.00
Isolated boulders	cy	400	4.00	7.00
CMP underdr, 8" perf	lf	100	3.00	3.50

Commence: 11-17-58 Completion schedule: 350 cal days

(Unit Prices continued on p. 92)

This Manitowoc Model 3000 shovel equipped with a 2½-yd. dipper loads out 2000 yards of hard sandstone per day on a Midwest road job. One of the most important factors contributing to the unit's output record is the Manitowoc "Power-flo" drive described below.



The key to Manitowoc's extra power is the key to top production

. . . and that extra power is provided through the *exclusive* Manitowoc "Power-flo" slide pinion arrangement that directs the full flow of engine power *only* to the function in operation. There are no power-robbing extra gears moving, even when not in operation (and gears that don't move don't wear out) . . . no complicated trains of gears that hold production down and keep maintenance costs up.

What arrangement could be simpler? As shown in the photograph above, the slide pinion itself is a single, sturdy shaft, spline-fitted with the necessary gears to engage, or disengage the desired function. The slide pinion (No. 1 on the drawing) is driven directly from the drive shaft (2) using only one set of clutches to drive the travel, swing and boom hoist.

With the slide pinion up, the power flows directly from the reversing clutches to the travel gear (3) through the center pin and to the horizontal shaft in the carbody.

With the slide pinion down, the power flows directly to the swing shaft (4) containing the final drive pinion, which meshes with the carbody ring gear.

With the slide pinion in neutral, the reversing clutch is left free to operate the boom hoist (5) if an optional independent boom hoist is not used.

The result is *direct* power to every function . . . a feature found in *Manitowoc* cranes, draglines and shovels. The faster cycle, heavier lifts and bigger bites found in Manitowocs are the direct result of this simple and effective "Power-flo" design. That's why output is *measurably* higher with Manitowoc . . . that's why it will pay you to see your Manitowoc dealer for complete information on the rig best suited to your operation.

Manitowoc

MANITOWOC ENGINEERING CORP.

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Airport Gets Access Road

Relocation of Route 106 and access road to Hartness Airport, Vt., to use asphalt and bituminous

Six contractors bid for this $208,000 relocation of Route 106 and an access road to the Hartness Airport in Springfield and Weathersfield, Vt. On Oct. 24, the Corps of Engineers, New England Division, Springfield, Mass., awarded the contract to B&M Construction Inc., Hadley, Mass., on a bid 11% below the engineer's estimate and 7.6% below the second bid.

The largest item in the contract is the gravel subbase, 29,600 cu yd at $1.00 a yd. Bids on this item ranged from $1.00 to $1.30 a cu yd. The contract price of $20,000 for clearing and grubbing is for approximately 9 acres.

The work includes a crushed gravel surface course mixed in place with cutback asphalt, a double tack coat of asphalt with peastone seal, and a single tack coat of asphalt with sand cover; bituminous concrete pavement; guard rails and guide posts.

Some existing structures will be removed.

1C	B & M Construction, Inc., Hadley, Mass.	$207,804
2	Baslow Constr. Corp., Rutland, Vt.	224,991
6	Derrick DeGroot, Jericho, Vt.	285,038
EE	Corps of Engineers, New England Division, Springfield, Mass.	233,703

Bids: 10-15-58 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ls	job	$20,000	$9,000
Excavation, unclassified	cy	44,700	0.50	0.55
solid rock	cy	1,200	3.00	2.95
Borrow	cy	22,600	0.60	0.45
Exc, trench, uncl, 0-6'	cy	3,300	2.00	2.00
over 6'	cy	100	5.00	3.00
rock, 0-6'	cy	150	8.00	8.00
over 6'	cy	10	20.00	12.00
structural	cy	406	2.00	4.00
channel, uncl	cy	550	1.50	1.50
muck	cy	1,440	1.50	1.00
Subgrade, fine grading	sy	61,550	$0.10	$0.05
Subbase, gravel	cy	29,600	1.00	1.00
Base course, macadam	cy	120	6.00	7.50
Gravel backfill	cy	240	2.00	2.50
shoulders	cy	430	2.00	4.00
pits, strip	cy	4,440	0.20	0.20
Dust control	Mgal	180	6.50	4.00
Concrete, cl B	cy	255	45.00	72.20
Portland cement	bbl	415	6.50	4.80
Reinforcing steel	lb	30,900	0.15	0.22
RCP, 18"	lf	1,100	5.00	5.10
24"	lf	492	6.50	7.50
60"	lf	80	30.00	36.50
Cor galv met pipe, asph ctd, 36"	lf	108	16.50	17.00
underdrain, 6" perf	lf	3,394	3.00	2.50
Cl observation riser	ea	7	50.00	50.00
Rockfill, slope protection	cy	500	3.00	2.50
Paving, dumped rock	cy	30	8.00	25.00
Bit concrete pavement	t	150	15.00	11.00
Surf crse, cr gravel mixed in pl w/cutback asphalt	t	4,950	2.50	4.50
Tack coat, cutback asphalt, dbl w/pea stone seal	gal	5,300	0.17	0.50
single w/sand cover	gal	15,800	0.17	0.45
Cutback asphalt	gal	39,390	0.17	0.36
Cement rubber masonry	cy	150	40.00	48.00
Grd rail, plank w/preservative treatment	lf	360	3.00	3.05
3 cable, w/steel posts	lf	4,736	2.25	1.95
anchors for	ea	36	60.00	50.00
remov & reset	lf	160	2.00	2.05
Guard rail, remove present	lf	230	1.00	0.30
Steel guide posts	ea	56	$8.00	$11.50
Boundary markers	ea	48	35.00	16.00
Granite sloped edging	lf	860	2.10	3.00
Bldg, sta 35+30 d&r	ls	job	10.00	60.00
39+90 d&r	ls	job	10.00	50.00
41+70 d&r	ls	job	10.00	50.00
Winter rye	lb	380	0.10	1.00
Seeding	lb	410	1.00	1.20
Mulch	t	22	50.00	60.00
Topsoil	cy	220	3.00	3.00
Commercial fertilizer	lb	3,580	0.06	0.25
Sleeves for water pipes	lf	50	3.90	4.60
Cop water tube, seamless, ¾"	lf	50	3.00	2.00
Steel drop inlet grates	ea	1	100.00	35.00
Marker, town line, sta 32+30, remove & reset	ls	job	25.00	50.00
Superstructs, remove present	ls	job	100.00	100.00

d&r—demolish & remove

Awarded: 10-24-58

Completion schedule: 360 cal days

Sewage Project Bid 5% Below Estimate

Three contracts for a 1.5 mgd primary sewage treatment plant and emergency overflow sewer for the Easthampton, Mass., Board of Public Works, total $294,598, 5% below the engineer's estimate, and 2.3% below the second bid.

The six bids on this project break down like this:

	Amount	% of Total
General Contract:		
Halloran Constr. Co., Providence R. I.	$240,243	81.5
Subcontracts:		
Electrical Work		
Richard A Turner, Co. Inc., Springfield, Mass.	6,775	2.3
Piping Work		
Holyoke Valve & Hydrant Co., Holyoke, Mass.	47,580	16.2
Total	$294,598	100.0

Tighe & Bond, Holyoke, Mass., is the consultant.

The treatment plant includes two primary clarifiers, 99½ ft long and 14 ft wide, with an average water depth of 7½ ft; and two digesters, 35 ft dia and 20 ft high.

All concrete must attain a compressive strength of 3,000 psi in 28 days.

The contractor furnishes all materials. The railroad is adjacent to the site.

Minimum wages include: power shovel, crane and trenching machine operators $3.50; bulldozer and tractor operators, $3.04; pipelayers $2.27; common laborers $2.27, all including fringe benefits; electricians $3.30.

The six bids, all of which included subcontracts for the electrical and piping systems, shaped up like this:

(Continued on 94)

PEELLE DOORS

for Nuclear Applications

INDUSTRIAL RESEARCH LABORATORIES, INC., Plainsboro, New Jersey
ARCHITECTS: SKIDMORE, OWINGS & MERRILL • GENERAL CONTRACTORS: TURNER CONSTRUCTION CO.

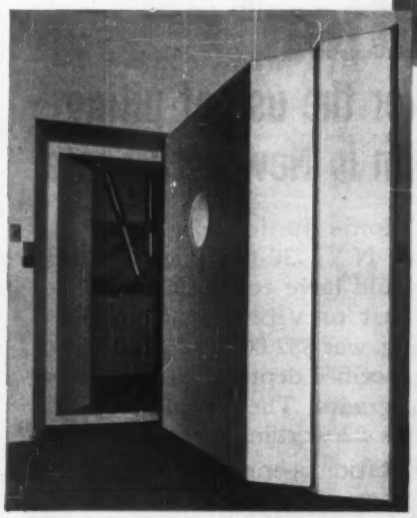
WHAT IT TAKES TO SUPPLY DOORS FOR NUCLEAR STRUCTURES

The engineering and functional aspects of doors used in hot cells, reactors, irradiation chambers and other nuclear structures pose many unusual problems that most door fabricators have never had to face.

Materials of great weight and density are used in nuclear shielding doors. Such doors may be made of lead, steel, concrete—sometimes heavy aggregate concrete—and often of a combination of these and other materials.

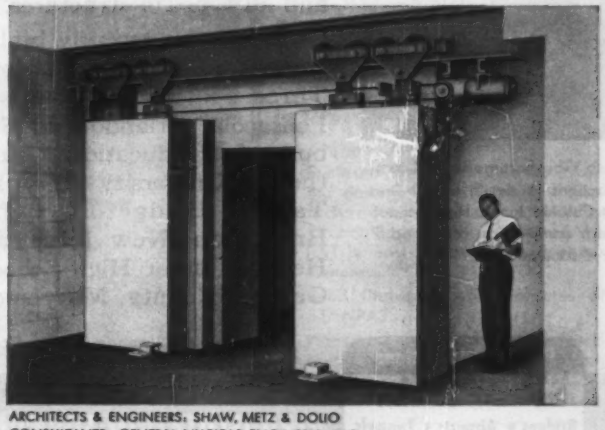
A great wealth of design and engineering experience, gained in furnishing doors for X-ray rooms, high frequency sound laboratories, jet engine test cells and for some of the most prominent nuclear laboratories in the world places The Peelle Company in a strong position to engineer, fabricate and install the various types of doors required for nuclear facilities.

Write for color brochure containing photos and descriptions of an interesting variety of Peelle nuclear door installations.



HOT CELL DOORS AT PLAINSBORO, N. J.

The above battery of hot cell doors was photographed in the Industrial Reactor Laboratories for which Peelle engineered and installed eight nuclear shielding doors of various kinds. Photo at left shows one of these doors partially opened. Each of these doors weighs 26 tons and consists of a 3' thick steel shell filled with concrete and hung on massive steel hinges of superior design. A transfer hole in each door permits placing small objects in the cell while the door is closed.



ARCHITECTS & ENGINEERS: SHAW, METZ & DOLIO
CONSULTANTS: GENERAL NUCLEAR ENGINEERS, INC.

HOT LAB DOOR IN CARACAS, VENEZUELA

This Peelle center parting, horizontal sliding door in the I.V.I.C. Reactor Building is motorized. To provide extra hall space, the door panels were constructed of machined solid steel slabs, measuring 16" in thickness and weighing 15 tons. The opening frame consists of heavy steel slabs to provide proper shielding and interlocking.

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THE PEELLE COMPANY
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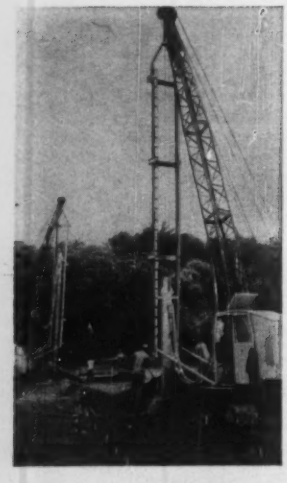
Vibroflotation®

saved $53,000 over the use of piling for school foundation in New York State



Two Vibroflots made 704 compactions to depth of 20 feet at Colonie Junior High School. Each compaction consumed 7 or 8 tons of sand.

For Colonie Junior High School, Colonie, N.Y., 30-ton piles, 60 feet long would have cost $105,000. The total cost of Vibroflotation, plus stripping, was $52,000 to compact the soil to specified depth of 20 feet below footing grades. The complete operation took 22 working days.

Vibroflotation is one way to get more out of construction dollars for school and all types of structures.

Other schools recently built on sand compacted by Vibroflotation include: Three Florida Catholic schools in Pensacola, Orlando and St. Petersburg; four educational buildings at the new University of South Florida, Tampa; Bridgeton High School, Bridgeton, New Jersey; Marlow Heights Junior High School, Prince George's County, Maryland.

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Commercial Foundations
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930 Fort Duquesne Boulevard
Pittsburgh 22, Pa.
ATlantic 1-2500

. . . Sewage Project

1C	Halloran Constr. Co., Providence, R. I.	$294,598
2	R. H. White Constr. Co., Auburn, Mass.	301,208
6	R. Zoppo, Inc., Norwood, Mass.	377,135
EE	Tighe & Bond, Holyoke, Mass.	310,215

Bids: 10-1-58 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, trench	cy	2,000	$1.50	$1.00
earth stripping	cy	2,000	0.50	0.70
open earth	cy	5,000	1.00	1.30
ledge	cy	100	10.00	1.00
Borrow, ordinary	cy	5,000	0.50	1.30
gravel	cy	800	2.25	2.20
Broken stone	cy	800	2.50	4.75
Loam furnish	cy	100	5.00	5.00
Loaming, fine grading	sy	6,000	0.70	0.16
Concrete, structural	cy	950	62.00	69.50
Steel reinforcement	lb	124,000	0.14	0.155
MH or CB, brick, 5' or less	ea	7	260.00	250.00
vertical ft.	vf	24	30.00	30.00
Vitrified clay pipe, 6"	lf	300	2.00	3.50
8"	lf	250	2.50	3.60
15"	lf	100	5.00	8.00
21"	lf	220	10.00	12.00
Cmt conc sewer pipe, 21"	lf	700	10.00	6.15
Pipe, class 150, 4"	lf	700	3.00	3.10
Tile underdrains	ls	job	3,000	3,160
Filter sand	cy	550	2.50	4.00
Riprap	t	20	30.00	10.00
Woven wire fence	lf	1,530	3.50	3.20
Bituminous material	gal	2,600	0.60	0.39
Concrete walk	sy	120	4.40	5.00
Control bldg.	ls	job	78,000	60,402
Gas holder	ls	job	16,000	12,326
Storage garage	ls	job	14,000	18,409
Chlorination equipment	ls	job	7,000	6,928
Subcontracts				
Electrical system	ls	job	6,775	6,775
Piping system, complete	ls	job	47,580	61,198

Completion schedule: 365 calendar days

North Gila, Ariz. Drain is Extended 3,000 ft.

This $13,841 contract to Vinson Construction Co., Phoenix, Ariz., by the Bureau of Reclamation, Yuma, Ariz., is for the construction of an open drain extension, approximately 3,000 ft. long, to the existing North Gila Drain Line No. 3 east of Yuma, between the Gila River and the Gila Gravity Canal.

The contract also calls for three 24-in.-dia concrete drain tile culverts without headwalls or transitions. Approximately 525 cu ft of rock excavation will be required. The excavation contract price is $7.00 a cu yd. Other prices on this excavation range from $4.00 to $10.40 a cu yd.

The contracting officer may order suspension of any work subject to climatic conditions. The whole or any portion of the contract work may also be suspended. Except for suspensions due to climatic conditions, however, the contractor shall not be denied actual, reasonable and necessary expenses caused by such delays.

The contractor furnishes all materials.

Prevailing wages include: tractor operators, including bulldozers, $3.235; trenching machine operators $3.235; teamsters $2.36; common laborers $2.36.

The five bids included:

1C	Vinson Constr. Co., Phoenix, Ariz.	$13,841
2	Tanner-Heuser-Garnett, Phoenix, Ariz.	14,398
5	Silberberger Constructors, Inc., Riverside, Cal.	28,638
EE	Bureau of Reclamation, Yuma, Ariz.	12,529

(*Unit Price continued p. 95*)

. . . North Gila Drain

Bids: 10-7-58 Items	Unit	Quantity	Unit Prices 1C	2
Excavation for drain, common	cy	9,000	$0.50	$0.75
rock	cy	525	7.00	4.00
Excavation structures	cy	1,600	0.50	1.00
Backfill around structures	cy	1,300	0.40	1.00
compact	cy	1,300	2.00	0.50
Port cmt conc drain tile, extra quality, 24" furn & instal	lf	362	3.00	4.00
Grav bkfl around pipe, furn & pl	cy	110	6.00	5.00

Awarded: 10-24-58
Commence: 10-28-58 Complete: 12-12-58
Liquidated damages: $25/cal day

Wide Spread on Manhole and Duct System Bids

Bids on this electric power and telephone manhole and duct system for the city of San Diego, Cal., ranged from a low of $113,708 to a high of $179,987, a spread of 58%.

The award to Federal Electric Co., San Diego, is 21.2% under the engineer's estimate and 3.2% below the second of the nine bids.

E. F. Gabrielson is city engineer.

The work includes construction of concrete power and telephone manholes, and a power duct system with appurtenances, in the Quivira Lease Area, Mission Bay Park.

Bids on the power manholes ranged from a low of $1,600 each, to a high of $3,285. On the telephone manholes, type T bids ranged from $500 to $1,036 each, and on type TA from $620 to $1,137 each.

All telephone and power ducts are fiber, concrete encased, and break down like this:

	ft
Telephone ducts, 2-3 in	2,400
Power ducts, 2-3 in	200
4-3 in	100
Combination power and telephone ducts, 4-3 in	5,625
6-3 in	260
Total ducts	8,785

Street light conduits, included in the lump sum bid for ducts and appurtenances, are 11,400 ft of 2-in. A.C., with 24,000 ft of 5,000 v. cable. There are also 69 street light standards.

The power manholes are 8 x 10 ft. Twelve of the telephone manholes are 4 x 5 ft, and the remaining three are 5 ft, 6 in. x 7 ft, 6 in.

The nine bids on this manhole and duct system project shaped up like this:

1C Federal Electric Co., San Diego, Cal.	$113,708
2 ETS-Hokin & Galvan, San Diego, Cal.	117,433
9 Davies Electric Co., San Diego, Cal.	179,987
EE City Engineer, Civic Center, San Diego	144,260

Bids: 10-21-58 Items	Unit	Quantity	Unit Prices 1C	2
Power duct syst & appurtenances	ls	Job	$78,343	$61,647
Manholes, conc power	ea	17	1,600	2,447
telephone, tp T	ea	12	500.00	879.00
tp TA	ea	3	620.00	957.00
Crushed run rock bedding	cy	30	10.00	25.60

Complete: 120 calendar days

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read column B only
IF YOU'RE UNFAMILIAR WITH STANPAT
read column A and B

COLUMN A

Thousands of firms save thousands of drafting hours with STANPAT
STANPAT—the remarkable tri-acetate that is pre-printed with your standard and repetitive blueprint items, easily transferred to your tracings by an adhesive back or front. Relieves time-consuming and tedious detail of re-drawing and re-lettering specification and revision boxes, standard symbols, sub-assemblies, components and cross-sections. Saves hundreds of expensive hours of drafting time and money, frees the engineer for concentration on more creative work.
so simple to use:
1 PEEL the tri-acetate adhesive from its backing.
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3 PRESS into position, will not wrinkle or come off.
Stanpat Co.

COLUMN B

NEW resin back STANPAT ELIMINATES GHOSTING, offers better adhesive qualities on specific drafting papers.

THE PROBLEM

Some of our longtime customers first called our attention to the "ghosting" problem. Certain tracing papers contain an oil which could be leeched out by the STANPAT adhesive (green back) causing a ghost.

THE SOLUTION

A new STANPAT was developed (red back), utilizing a resin base which did not disturb the oils and eliminates the ghost. However, for many specific drafting papers where there is no ghosting problem, the original (green back) STANPAT is still preferred.

WHICH ONE IS BEST FOR YOU?

Send samples of your drawing paper and we will help you specify. Fill out coupon below:

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STANPAT CO., Whitestone 57, N. Y.
Phone: FLushing 9-1693-1611

☐ Enclosed are samples of the drafting paper(s) I use (identify manufacturer). Please specify whether Rubber Base or Resin Base STANPAT is most compatible with these samples.
☐ Send literature AND samples of STANPAT.
☐ Please quote price on our enclosed sketches which we are considering to have pre-printed by STANPAT.

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Tips on grade and alignment of Beth-Cu-Loy culvert pipe

BETHLEHEM STEEL

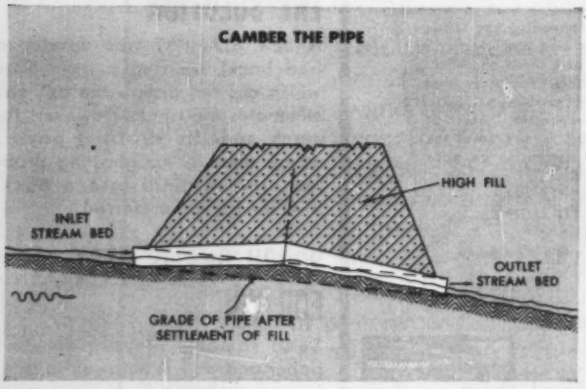
Because of its light weight and resistance to fracture, a culvert pipe made of Beth-Cu-Loy corrugated galvanized sheets is the easiest to install quickly and economically.

However, even with a Beth-Cu-Loy culvert, it pays to plan ahead for best results. Careless installation can undo a good design.

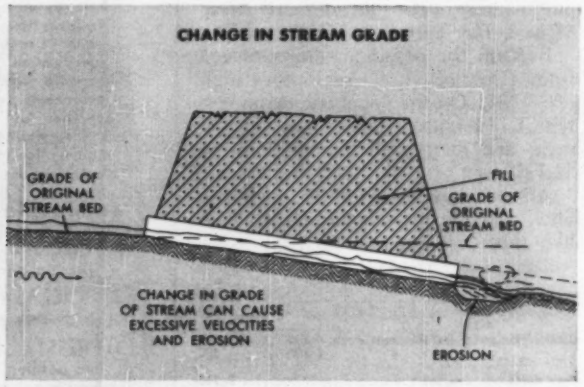
After making a careful study of the area and location, it's best to prepare a detailed plan to show all requirements. Width of highway, shoulders, slope of embankments, height of fill, grade of stream bed, elevation of culvert grade, length of pipe, skew angle, and other factors should be included.

The drawings shown here illustrate several typical culvert installations and grades under fill, with helpful comments covering the essentials in each example. Your own experience could no doubt embellish these cases to a considerable extent.

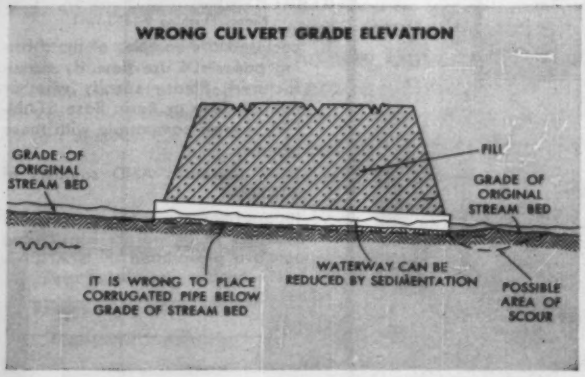
When you specify or order culvert pipe, be sure it is corrugated galvanized steel. Bethlehem does not fabricate this pipe as such, but we do manufacture the galvanized Beth-Cu-Loy sheets which fabricators make into pipe. In all respects Beth-Cu-Loy meets the rigid specs of the AASHO. For further information, write your fabricator for our Booklet 425-A, "Solving Drainage Problems."



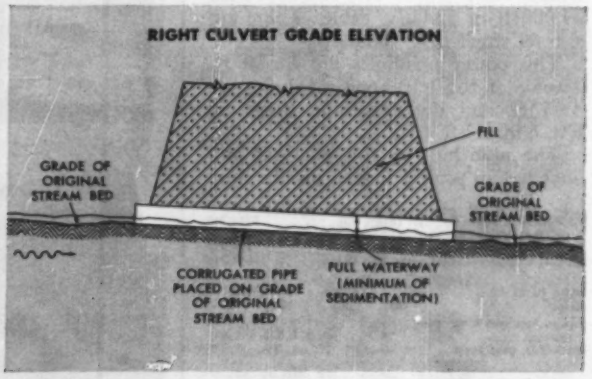
The corrugated steel pipe should always be cambered under a deep fill, so the grade of the pipe will level out with the settlement of the fill.


CHANGE IN STREAM GRADE
GRADE OF ORIGINAL STREAM BED
FILL
GRADE OF ORIGINAL STREAM BED
CHANGE IN GRADE OF STREAM CAN CAUSE EXCESSIVE VELOCITIES AND EROSION
EROSION

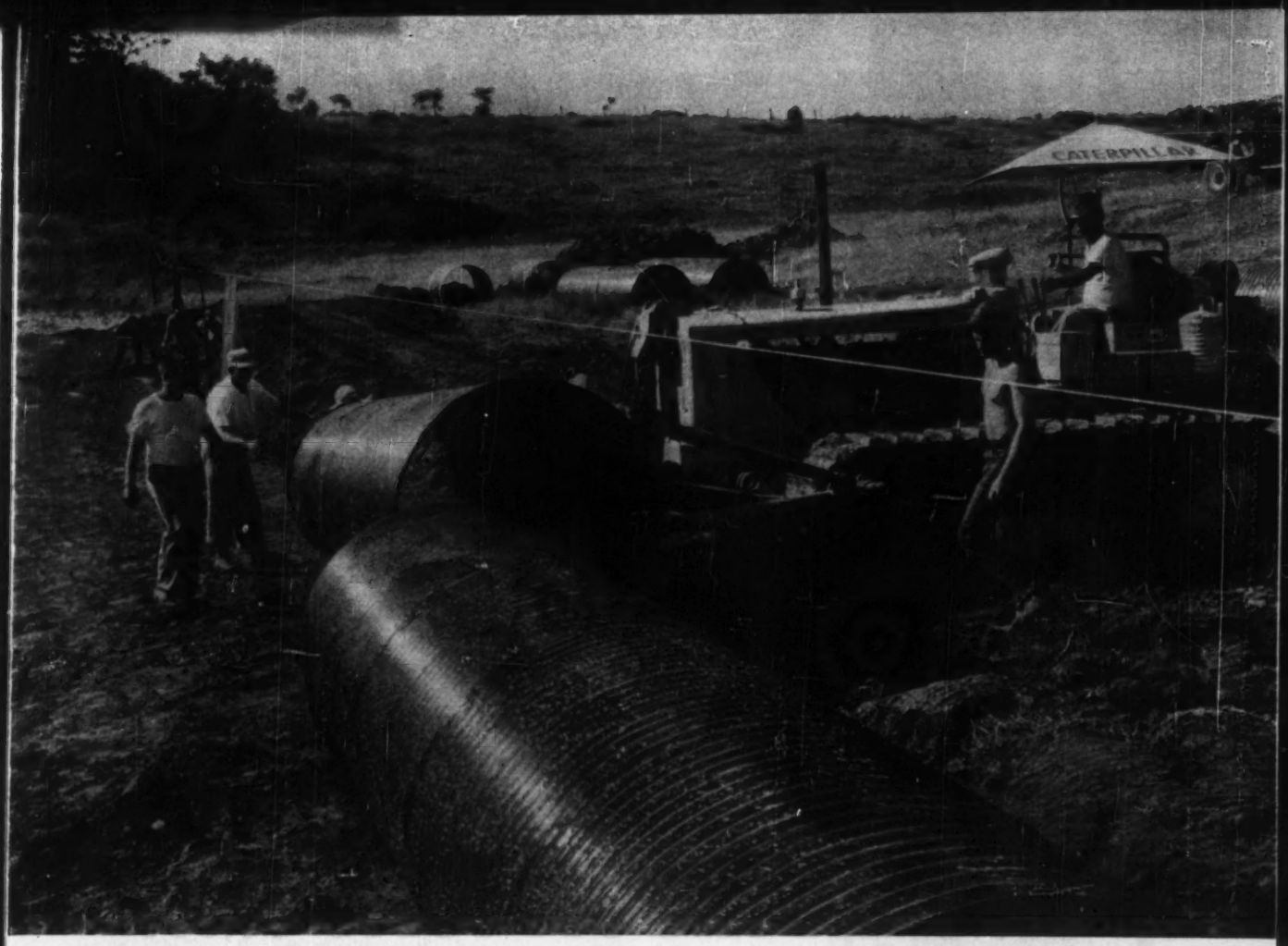
When the grade is increased in a stream bed and there is danger of excessive erosion at the outlet, the pipe should be continued to the point of disposal.


WRONG CULVERT GRADE ELEVATION
GRADE OF ORIGINAL STREAM BED
FILL
GRADE OF ORIGINAL STREAM BED
IT IS WRONG TO PLACE CORRUGATED PIPE BELOW GRADE OF STREAM BED
WATERWAY CAN BE REDUCED BY SEDIMENTATION
POSSIBLE AREA OF SCOUR

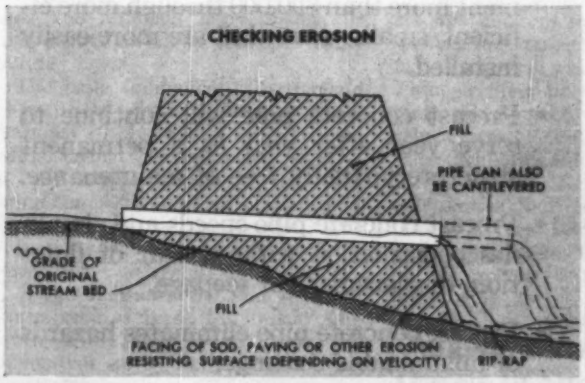
Do not place the pipe below the grade of the original stream bed. When this is done, there are hazards of sedimentation and serious scour at the exit.


RIGHT CULVERT GRADE ELEVATION
FILL
GRADE OF ORIGINAL STREAM BED
GRADE OF ORIGINAL STREAM BED
CORRUGATED PIPE PLACED ON GRADE OF ORIGINAL STREAM BED
FULL WATERWAY (MINIMUM OF SEDIMENTATION)

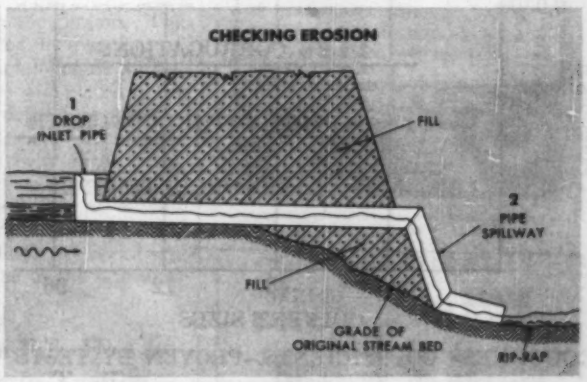
Place the culvert pipe on the same grade as the original stream bed, and without change in the natural slope of the stream, if possible.



Installing a 48-in. asphalt-coated Beth-Cu-Loy culvert under a U. S. highway bypass near Harrisonburg, Va. Note grade of culvert and the precautions taken to assure correct alignment.



Two methods of checking erosion at the exit bank are shown here. The best and most economical solution is to extend the corrugated steel pipe as a cantilever.

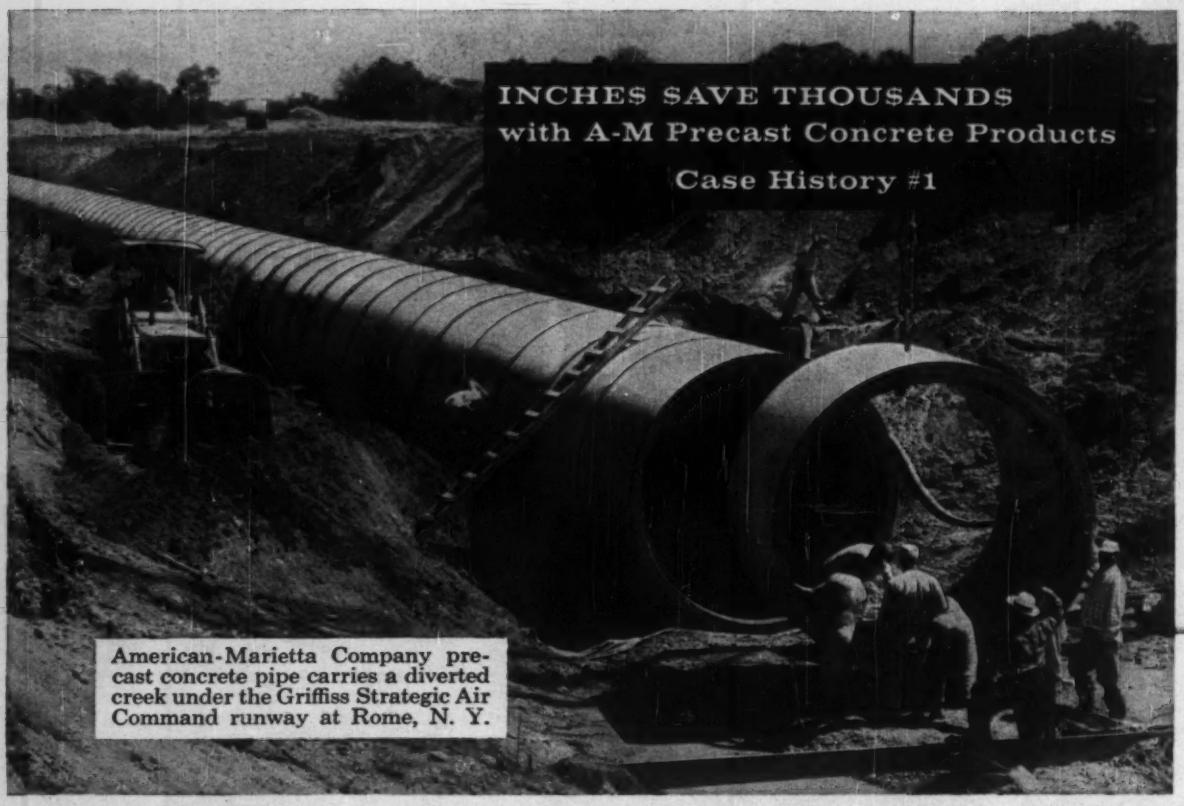


Two practical methods of checking soil erosion by the use of (1) a corrugated drop-inlet pipe at the entrance, and (2) a corrugated pipe spillway at the exit.

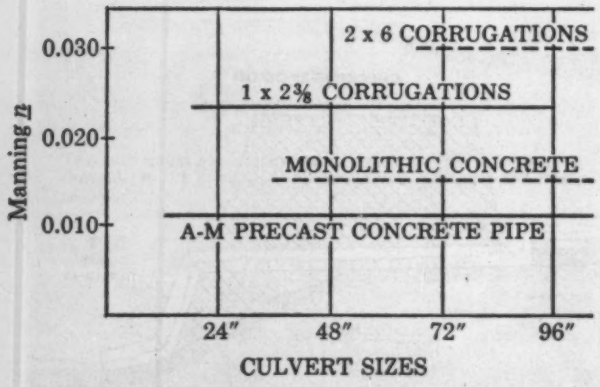
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL


INCHES SAVE THOUSANDS
with A-M Precast Concrete Products
Case History #1
American-Marietta Company precast concrete pipe carries a diverted creek under the Griffiss Strategic Air Command runway at Rome, N. Y.

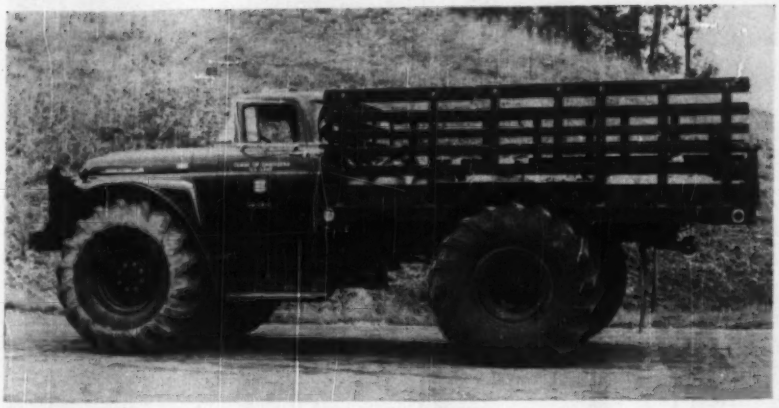
SMOOTHER SURFACES OF A-M CONCRETE PIPE CUT COSTS $90,000



ROUGHNESS COEFFICIENTS.–PROVEN BY TESTS

- Concrete pipe saved the U. S. Government more than $90,000 through more efficient, smaller sizes that are more easily installed.
- Precast concrete pipe will continue to serve year after year as a permanent structure virtually free of maintenance.
- Precast concrete pipe speeds and simplifies construction without fear of flotation, displacement or seepage.
- Precast concrete pipe eliminates hazards of inflammable coatings.

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600



Standard parts combine to produce . . .

Unusual Off-the-Road Truck

An off-the-road, four-wheel drive truck recently developed for the U. S. may find fast acceptance among highway builders, surveyors, test drillers, bridge foundation men and others who go into the wilderness ahead of roads.

The truck can carry a 3,000-lb load, climb a 24-in.-high verticle obstacle, clear 22-in.-high obstructions and climb a 60% grade. While it is not a swamp buggy, it can operate in mud, sand, snow and marsh that would stop most other vehicles. Its top over-the-road speed is 42 mph.

The vehicle was assembled to Corps of Engineers specifications by the Marmon-Herrington Co. of Indianapolis, Ind., and although it is unique, its components are all of standard manufacture.

The basic component is a standard 1½-ton Ford chasis. Tires are conventional 10 ply 18.00 x 26 directional treads having a loaded radius of 27.2 in. and a diameter of 62⅛ in. The torque proportioning unit installed in the rear axle is made by No-Spin. The hydraulic power steering unit and the power brakes are regular Ford products, as is the transmission. The auxilliary transmission is made by Fuller. The winch is by Gar Wood while the differentials are by Ford and Marmon-Herrington.

The truck's unusual features include a tire inflation schedule on the dashboard, a front wheel position indicator, and rear axles equipped with sheer plates.

The tire inflation schedule serves as a guide to a trained driver in manually adjusting tire pressures for maximum efficiency in all types of terrain under varied payloads at at different speeds.

The front wheel position indicator—usually found only on amphibious vehicles—is of great importance during operation in mud, snow or sand. It tells the driver the exact position of the front wheels so that he can keep from "plowing in" too deep. It also helps the driver keep full control.

The sheer plates on the rear axles are a feature that can be appreciated by any earthmover who uses trucks. Where an ordinary broken axle usually takes hours and sometimes even days to repair, the sheer-plated axle can be repaired within 15 minutes after a breakdown.

The principle is simple. The axles are split adjacent to the pinions. The sections are connected by two face-to-face "flanges" in which holes are drilled. Through these holes are placed sheer pins, the number depending on the vehicle weight and size. Before the axles themselves can twist off or break, the pins sheer. Replacement requires only simple tools and can be accomplished in the field without removal of wheels or axles. The price is not set, but it's expected to be in the neighborhood of $12,000.

Aluminum Pre-Fab House Travels In Single Trailer

An aluminum exterior prefabricated house of 5½ rooms, complete with bathroom and kitchen, is being manufactured by National Homes Corp. The entire house can be transported to its site in a single truck-trailer.

The house has a 40-ft front, weighs 11 tons, and when completed covers an area of 1,120 sq ft. National Homes Corp., Lafayette, Ind.

IF IT'S A
WET JOB
let Griffin analyze your ground water problem and estimate costs

GRIFFIN
WELLPOINT CORP.
SALES • RENTAL • CONTRACT
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Since 1915
CONCRETE
SAND AND CEMENT
Placed by Air
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GUNITE CONCRETE & CONST. CO.
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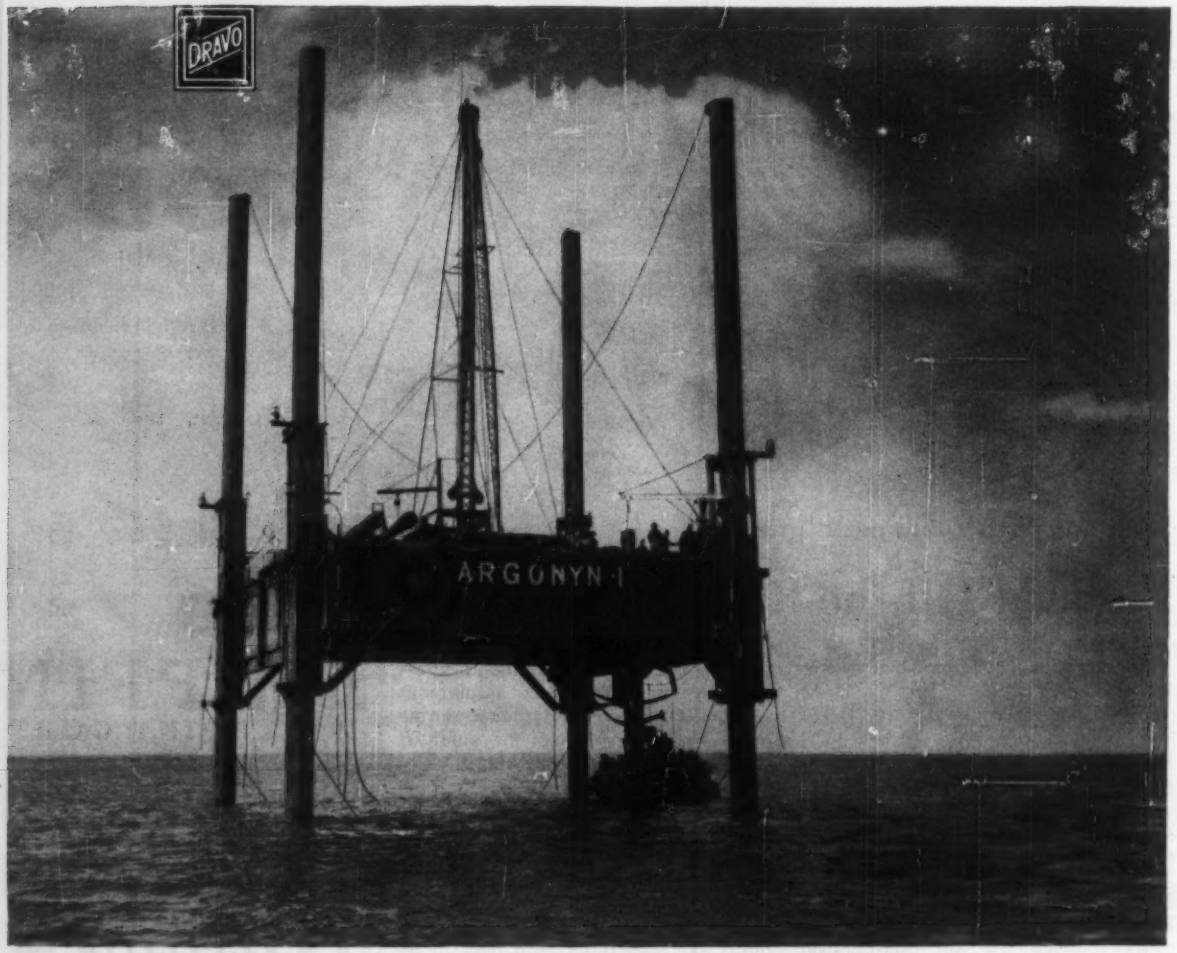
2016 W. Walnut St., Chicago 12, Ill.
1004 Market St., St. Louis 1, Mo.
3206 Houston Ave., Houston 9, Texas
1136 W. Orangethorpe, Fullerton, Calif.
Milwaukee—Twin Cities—Denver—New Orleans

FOUNDATIONS
DRILLED CASSIONS
BELL
Truck, Crane Throughout
HOUSTON TEXAS
4655 Telephone Rd.
OLIVE 4-3629
BELLED PIERS
BOTTOM
& Barge Rigs The U.S.A.
DALLAS TEXAS
1208 Industrial
RIVERSIDE 7-8525
BELL BOTTOM FOUNDATION CO.



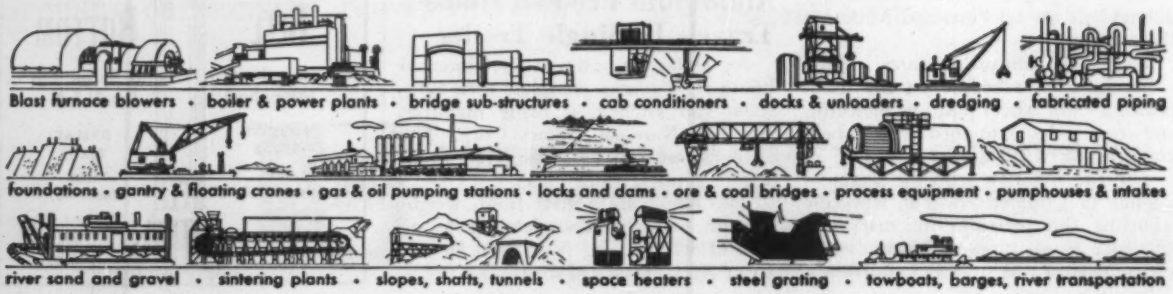
First Offshore Drilling Platform on U. S. Side of Lake Erie Built by Dravo

The first offshore gas well on the American side of Lake Erie is being drilled by New York State Natural Gas Corporation. Operations are underway, near Conneaut, Ohio, from a new mobile rig built by Dravo.

The "Argonyn-1" will work in 30 to 60 feet of water and can be towed easily from one site to another. Of welded pontoon construction, it is 50 feet square. At each location, the 130-foot-long legs are driven firmly into the lake bottom and the platform is hoisted by dual hydraulic jacks on each leg.

Dravo's wide experience on construction jobs "in or around water" can help you realize genuine economies on such projects. For information on this or the other products and services pictured below, write DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

DRAVO
CORPORATION


Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping
foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes
river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

Mass., Braintree—POWER—BA 1/16—Town, Electric Light Dpt., 44 Allen St., Braintree, Norton P. Potter Station Power Plant—Fore River, East Braintree. $800,000. Plans deposit $100. Extended date. Gilbert Assoc. Inc., 525 Lancaster Ave., Reading, Pa., engr. CD 10/21.

Mass., Sturbridge—SCHOOL—BA 1/16—Tantasque Regional School Comn., c/o Supt. Schools, Regional High School addn. $650,000. Plans deposit $50. Stoner Assoc., 118 Newbury St., Boston, archts. CD 1/8.

▲ **Conn., Norwalk** — SCHOOL — BA 1/20 — Town, City Clerk, City Hall, South Norwalk, general constr. and site work, Brien McMahon Junior High School. $3,855,250. Plans deposit $100. Lyons & Mather, 211 State St., Bridgeport, archts. Paul D. Harrigan, 909 Whalley Ave., New Haven, engr. CD 1/23.

HEAVY CONSTRUCTION—LB & CA

† **Five Boro Constr. Corp.**, 2 Lafayette St., New York 7, N. Y., CA **$452,634**, constr. ADC facilities, consisting Flight Simulator Training Bldg., Readiness Crew Bldg, Rocket Storage Bldg. and electrical distri., Loring Air Force Base, ENG-19-016-59-38, LIMESTONE, ME. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Nov. 26. CD 11/21.

NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord, Bids opened 12/11,

N. H.—Landers & Griffin, Inc., 800 Islington St., Portsmouth, N. H. LB **$527,580** (6 bidders) 3.729 mi. surf. treated gravel roadway, Cornish-Plainfield, Sullivan Co.;

N. H.—Weaver Bros. Constr. Co., Inc., 259 South Main St., Concord, N. H. LB **$383,857** (6 bidders) b. conc. roadway 1,545 mi. Hopkinton-Warner, Merrimack Co. CD 12/3.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 12/9,

Mass.—Suburban Excavating, Inc., 4 New Salem St., Wakefield, Mass. LB **$737,668**, est. $816,891, state hy. and stringer bridge, Rte. 125. F-372 (3), Andover;

Mass.—Rufo Constr. Co., 89 Adams St., Newton, Mass. LB **$245,852**, est. $381,794, ramps, etc. Washington and Grove Sts. and Rte. 128 Interchange, U-272, Newton;

Mass.—Anthony Simeone & Sons, Inc., 500 Turnpike St., Canton, Mass. LB **$293,502**, est. $330,211, State Hy. and steel stringerbridge, East Main St., Rte. 123. S-112 (1), Norton. CD 11/26.

BUILDINGS—LB & CA

Winson Constr. Co., Inc., 57 Bay St., Winslow, Me. CA **$450,000** HIGH SCHOOL, FAIRFIELD, ME. Fairfield High School, supt. Schools, Fairfield, Me. Bids Dec. 2. CD 12/9, under LB.

Monaco Constr. Co., 94 Reservoir Ave., Bridgeport, Conn. LB **$539,400** (9 bidders) enlarge SCIENCE BLDG. Danbury State Teachers College, Proj. BI-R-157, DANBURY, CONN. State P. Wks. Comr., 165 Capitol Ave., Hartford, Conn. Bids Dec. 10. CD 12/3.

E. & F. Constr. Co., 104 Wells St., Bridgeport, Conn. LB **$864,000** (6 bidders) HIGH SCHOOL addn., Queen St., NEWTOWN, CONN. Town, School Bldg. Com., Town Hall, Newtown, Conn. Bids Dec. 8. CD 11/11.

▲ **E & F Constr. Co.**, 94 Wells St., Bridgeport, Conn., CA **$2,352,235** North End HIGH SCHOOL, STRATFORD, CONN., Town, School Bldg. Comn., Town Hall, Stratford, Conn., Bids Dec. 4, awarded Dec. 11. CD 12/11, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **New York**—BA On Or About 1/15—U. S. Eng., 111 E. 16th St., New York, Zone 3, constr. Unit No. 2, Part 2 (Twin Orchards), Endicott, Johnson City and Vestal Flood Control Proj., Vestal, Serial No. CIVENG-30-075-59-33. $300,000-$500,000. CD 9/22.

▲ **N. Y., Brooklyn**—BA 1/16—Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York, Zone 7, Contr. No. 2C, Kent Ave. Intercepting Sewer, Franklin St. and Kent Ave. for Newtown Creek Pollution Control Project, Brooklyn Boro. Plans deposit $80. CD 11/16/44.

† **N. Y., Montauk**—POWER PLANT—BA 1/22—U. S. Eng., 111 E. 16 St., New York, Zone 3, constr. power plant, Montauk AC&W Station, Serial No. ENG-30-075-59-123. $500,000-$1,000,000. CD 7/3.

BUILDINGS—BA

Md., Towson—SCHOOL—BA 12/30—Baltimore Co. Bd. Educ., Aigburth Rd., Zone 4, 1 story masonry Scotts Branch Elementary School, Marriotts Rd. north of Liberty Rd., west of Baltimore. $750,000. Plans deposit $50. Wm. E. Gray, 328 N. Charles St., Baltimore, Zone 1, archt. CD 5/15/56.

N. J., Princeton—SCHOOL—BA 1/6—Princeton Twp. Bd. Educ., Johnson Park Elementary School. $500,000. Plans deposit $75. Kelly & Gruzen, 60 Park Place, Newark, archts. Harwood & Gould, 100 W. 42 St., New York, N. Y., engrs. Bids Oct. 30 rejected. CD 10/1.

▲ **N. Y., Brooklyn**—HOSPITAL—BA 1/14—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, general constr., plumbing, heating and ventilating and electrical work for new addn. and modernization existing buildings to Cumberland Hospital, Auburn Pl. and N. Portland Ave., Brooklyn Boro. Plans deposit $40. CD 12/9.

▲ **N. J., Hoboken**—HOUSING—BA About 1/22—Housing Auth. of City of Hoboken, 400 Harrison St., two 10 story, 208 unit housing, Harrison Gardens, Jackson and Harrison Sts., Proj. NJ 15-3, $3,000,000. Irwin Gerber, 11 Commerce St., Newark, archt. CD 7/19/56.

▲ **N. Y., New York**—TECHNOLOGY—BA 1/23—Bd. Higher Educ., City College, Rm. 10, Brett Hall, 136th St. and Convent Ave., Zone 31, (1) general constr. (2) elevators and moving stairways (3) plumbing (4) heating and ventilating (5) electrical work (6) casework for Technology Bldg. at City College. Plans deposit (1) $75.;(2 and 6), $30 each; (3) $50; (4) $60; (5) $75. CD 1/10.

HEAVY CONSTRUCTION—LB & CA

▲ **Brookfield Constr. Co.**, 521 5th Ave., New York, N. Y., CA **$6,708,333**, Contr. GWB-190.000, constr. Section No. 7 of approach roadway sys. in New York City for lower level expansion of George Washington Bridge; Contr. GWB-190.011, constr. Section 8 of approach roadway sys. in New York City for lower level expansion of George Washington Bridge, Incl. constr. foundations for Bus Passenger Facility over depressed Expressway in blocks between Fort Washington Ave. and Wadsworth Ave., NEW YORK and NEW JERSEY. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Dec. 2. CD 12/4, under LB.

▲ **Gull Contg. Co. and L. G. DeFelice & Sons, Inc.**, 33-15 Lawrence, Flushing, N. Y., CA **$3,387,270**, 1 mi. section 8-lane Scenic Parkway parallel to Niagara River and gorge between Treadway Inn and Goat Island, Niagara Falls, Niagara Co., Spec. No. 632.0, Niagara, Contr. No. N18, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Nov. 20. CD 11/24, under LB.

Triton Constr. Corp., 66 Court St., Brooklyn 2, N. Y., LB **$624,900**, Contr. No. 3077a, general reconstr. Wharf Terminal, foot of 29th St., Gowanus Bay, BROOKYYN, N. Y. Comr. Marine & Aviation, Rm. 13, Pier 1, North River, New York 4, N. Y. Bids Dec. 5. CD 11/11.

▲ **Melwood Constr. Corp.**, 507 Fifth Ave., New York, N. Y., LB **$2,747,000**, reconstr. swing span and approaches of Madison Avenue Bridge over Harlem River between Manhattan and Bronx Boros, NEW YORK, N. Y. Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York 7, N. Y. Bids Dec. 5. CD 11/26.

MARYLAND—State Rds. Comn., 108 Lexington St., Baltimore, Zone 2,

The Bituminous Constr. Co., 3301 Ridgewood Ave., Baltimore 15, Md., CA **$599,688**, drainage, wid'n. surf. 3.159 mi. Route 2 near Baltimore, AA-453-6-52C, Anne Arundel Co. Bids Nov. 13. CD 11/20, under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

John H. Ensey, 1619 Ridgely St., Baltimore 30, Md., CA **$572,026**, grading, drainage, surf. and relocation 3.96 mi. State Rte. 468 southerly from Collinson Corner, AA 505-1-520, Anne Arundel Co. Bids Oct. 28. CD 11/20.

Transportation Corp. of America, 3600 M St. N.W., Wash., D. C., LB **$663,918** Bid A, **$106,691** Bid B (6 bidders) widening, paving New York Ave. between 1 St. N.E. and 7 St. N.W., Fed. Aid Proj. F-53(9), WASH., D. C. D. C. Govt., Dpt. Hys., 499 Pa. Ave. N.W., Wash., D. C. Bids Dec. 12. CD 12/3.

BUILDINGS—LB & CA

▲ **Edward Corning Co.**, 302 Bedford St., Stamford, Conn., LB **$1,493,000**, 2 story HOSPITAL addn., MOUNT KISCO, N. Y. Northern Westchester Hospital, E. Main St., Mount Kisco, N. Y. Bids Nov. 25. CD 11/3.

Herbert Kligman, 936 Stuyvesant Ave., Union, N. J., Own Forces, **$525,000**, 25 HOUSES, Raritan Rd., Cambridge Estates, CLARK, N. J.

▲ **Edward Brinkerhoff**, 732 Union Ave., Middlesex, N. J., Own Forces, **$1,000,000**, 46 HOUSES, Green Brook Rd., MIDDLESEX, N. J.

▲ **A. A. LaFountain, Inc.**, 159 Beech St., Hackensack, N. J., CA **$1,339,400**, general contract COURT HOUSE, NEW BRUNSWICK, N. J. Bd. Freeholders, Middlesex Co., Court House, New Brunswick, N. J. Bids Nov. 25. CD 12/2, under LB.

▲ **J. & H. Cosden Constr. Co.**, 800 Glenside Court West, Oradel, N. J., Own Forces, **$1,750,000**, 70 HOUSES, Blauvelt Place, ORADELL, N. J.

▲ **Henry A. Knott**, 2406 Greenmount Ave., Baltimore, Md., CA **$2,010,000** brick, concrete, steel, block Johnnycake JUNIOR HIGH SCHOOL near Catonsville, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson 4, Md. Bids Dec. 4. CD 12/9, under LB.

SOUTH

BUILDINGS—BA

▲ **Va., Arlington**—SCHOOL—BA 1/13—Arlington Co. Bd. Educ., 1426 Quincy St., Yorktown High School. Plans deposit $75. Rhees Burket, 1223 Connecticut Ave. N.W., Wash., D. C., archt. CD 5/19/57.

▲ **Ala., Sheffield**—HOSPITAL—BA 1/15—Colbert Co., Courthouse, hospital addn. $1,600,000. CD 9/12.

▲† **Va., Langley**—HEADQUARTERS—BA 2/5—General Services Admin., P. Bldgs. Service, General Services Bldg., 19th and F Sts. N.W., Wash. 25, D. C., constr. (except elevator plant and escalators) headquarters bldgs., Central Intelligence Agency, Proj. No. 44122; adv. ENR 12/18. CD 8/7/56.

BUILDINGS—SLC

W. Va., Beckley—BANK—Bank of Raleigh, Main and Fayette Sts., soon lets contract, 2 story, 73 x 102 ft., stone precast concrete bank. $500,000. Plans deposit $25. Hayes, Seay, Mattern & Mattern, 1615 Franklin Rd., Roanoke, Va., archts. CD 6/12.

HEAVY CONSTRUCTION—LB & CA

▲ **WEST VIRGINIA**—State Road Comn., Charleston, Zone 5,

Keeley Constr. Co., Box 208, Clarksburg, W. Va., CA **$1,984,604**, grading, draining 2.103 mi. Interstate 64 from 0.5 mi. West of Sect. 44 to Kanawha River, and grading, draining, b. conc. paving W. Va. Rte. 17 at intersection of Interstate Rte. 64, Proj. I-64-1(23)41 and S.206(6), Putnam Co. Bids Nov. 25, awarded Dec. 10. CD 12/1, under LB.

▲ **A. C. Samford, Inc.**, P. O. Box 1229, Albany, Ga. CA **$1,359,900**. Haw River Sewage treatment plant, BURLINGTON, N. C. City of Burlington, City Hall, Burlington, N. C. CD 12/1, under LB.

† **Coley & Petersen, Inc.**, 840 W. 25 St., Norfolk, Va. LB **$429,612** (7 bidders) off-site utilities for Capehart Housing, Marine Corps Base, NBy 10676, Spec. 10676/57, CAMP LEJEUNE, N. C. Dist. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Dec. 9. CD 11/20.

† **R. N. Rouse & Co.**, 1019 N. William St., Goldsboro, N. C. CA **$433,733**, Ammunition Storage Facilities,

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — **Middle West**
Middle Atlantic — **West of Mississippi**
South — **Far West**

PROPOSED WORK
Water Supply — **Public Buildings**
Sewers, Waste Disposal — **Mass Housing**
Bridges — **Commercial Buildings**
Streets & Roads — **Industrial Buildings**
Earthwork, Waterways — **Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

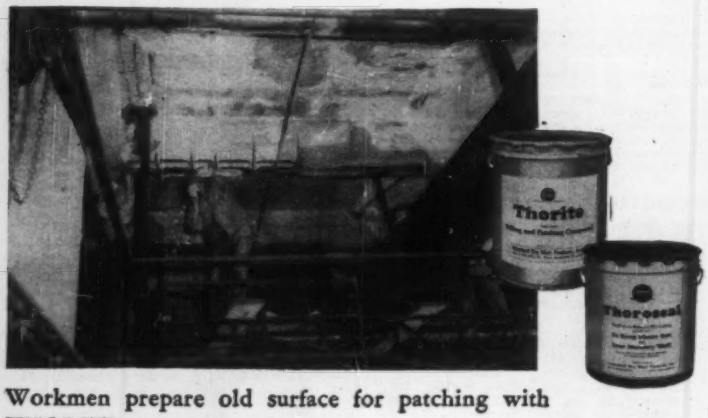
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

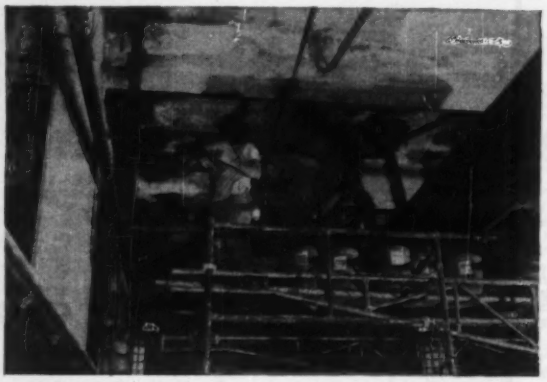
For additional reports see Construction Daily.

How THORITE and THOROSEAL made this underground structure sound again!



Workmen prepare old surface for patching with THORITE.

Water has entered the concrete and caused corrosion of reinforcing rods, blistering the concrete off surface and causing structural weakness throughout building.



Reinforcing was cleaned, all corrosion was removed and brush coat of THORITE applied over entire patching area, then filled in with trowel coats of THORITE, even with surrounding surfaces.

THORITE Patching Mortar sets in 20 to 30 minutes and can be coated with THOROSEAL while hardening.

"Fun to do it" **GET OUR 16 PAGE BROCHURE**

STANDARD DRY WALL PRODUCTS, INC.
NEW EAGLE, PENNA. CENTERVILLE, IND.

Seymour Johnson Air Force Base, ENG-31-075-59-12, GOLDSBORO, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Nov. 25. CD 10/28.

† **Jefferson Constr. Co.**, 3128 Coral Way, Miami, Fla. LB $495,852, est. $662,373 readiness crew Bldg., ENG-08-123-59-20, HOMESTEAD AIR FORCE BASE, FLA. U. S. Eng., Box 4970, Jacksonville, Fla. Bids Dec. 4. CD 11/7, under Florida.

▲ **Bumby & Stimpson**, P. O. Box 2608, Orlando, Fla., LB $1,234,256, 34 mi. gravity lateral sewers, GULFPORT, FLA. City, City Hall, Gulfport, Fla. Bids Dec. 9. CD 11/25.

A. G. Pinkston & Co., 1805 County St., Portsmouth, Va., LB $407,230 sanitary sewer imprvs. Proj. 26A, Northeast sewer laterals, ST. PETERSBURG, FLA. City, City Hall, St. Petersburg, Fla. Bids Dec. 3, CD 11/22/44.

▲† **S. Morgan Smith Co.**, 500 Lincoln St., York, Pa., CA $2,815,950 constr. three 74,600 hp. hydraulic turbines for addition to Wilson Dam, Muscle Shoals, ALABAMA. Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn. Awarded Dec. 4; **Brown-Boveri Co.**, 19 Rector St., New York, N. Y. CA $2,637,135 constr. three hydroelectric generators totaling 54,000 kw. to be constr. in Baden, Switzerland (Alabama).

BUILDINGS—LB & CA

▲ **Crosland-Roof Constr. Co.**, P. O. Box 1313, Columbia, S. C. CA $1,166,398. A.C. Flora HIGH SCHOOL, COLUMBIA, S. C. City School Bd., 1311 Marion St., Columbia, S. C. Bids Nov. 6. CD 10/27, under Richland Co. School Dist. No. 1, as owner.

▲ **J. A. Jones Constr. Co.**, 133 Ellis St. N. E., Atlanta, Ga. CA $1,185,851 Fulton County JAIL, ATLANTA, GA. Comrs. Fulton Co., Roads & Revenues, 409 Admin. Bldg., Atlanta, Ga. Bids Nov. 12, awarded Dec. 1. CD 11/20, under LB.

J. P. Roberts & Son Constr. Co., Inc., 203 E 1, Rome, Ga. CA $400,000 men's DORMITORY, MOUNT BERRY, GA. Berry College, Mount Berry, Ga. CD 10/31, under Ga., Rome.

▲† **Florida Builders, Inc.**, 700 43 St. S., St. Petersburg, Fla., LB $6,903,671 Base bid with alternates (9 bidders) 400 units Capehart, HOUSINGG, FORT RUCKER, ALA. U. S. Eng., 2301 Grant St., Mobile 7, Ala. Bids Dec. 10. CD 11/19.

▲† **Pearce & Gresham Co.**, 202½ 2 Ave. S.E., Decatur, Ala., LB $1,060,948, preflight evaluation laboratory, Redstone Arsenal, ENG-01-076-59-34, HUNTSVILLE, ALA. U. S. Eng., Box 1169, Mobile, Ala. Bids Nov. 25. CD 12/12, under LB.

▲ **Robert C. Crouch & Co.**, Sterick Bldg., Memphis, Tenn., LB $1,498,100, restoration of Ante-Bellum Bldg. (Old Capitol Bldg.) incl. 3 story, copper roof, air-conditioning, JACKSON, MISS. State Bldg. Comn., State Office Bldg., Jackson, Miss. Bids Dec. 10. CD 11/25.

Van Landingham Lumber Co., Starkville, Miss., LB $156,392, Coca Cola BOTTLING PLANT, Hy. 12, STARKVILLE, MISS. Starkville Coca Cola Co., Starkville, Miss. Thomas H. Johnston, Jr., Box 512, Starkville, Miss., archt. Bids Nov. 25.

▲ **The Florsheim Co.**, 50 Fannin St., Shreveport, La., CA approx. $1,275,000, 3 story OFFICE, BOOK STORE, ALEXANDRIA, LA. Louisiana Baptists Convention, Highland Baptist Church, 520 Olive St., Shreveport, La. Bids Nov. 12. CD 11/19, under LB.

St. Bernard Parish School Bd., Court House Bldg., Chalmette, La., rejected bids Dec. 3, 1 story, steel, frame, brick, concrete block and tile Carolyn Park Elementary School, CHALMETTE, LA. LB $617,975. Will re-advertise. CD 12/9, under LB.

▲ **Southern Constr. Co.**, Rossville, Ga., LB $1,349,000 est. $1,979,235 (9 bidders), 2 story, no bsmnt., brick MAINTENANCE BOARD BLDG. addn., ENG-15-029-59-1, FORT KNOX, KY. U. S. Eng., P. O. Box 59, Louisville 1, Ky. Bids Dec. 11. CD 11/17.

Hartz-Kirkpatrick Co., 25 Frederica St., Owensboro, Ky. CA $640,315, HOSPITAL addn., HOPKINSVILLE, KY. Jennie Stuart Memorial Hospital, 321 W. 17th St., Hopkinsville, Ky. Bids Oct. 2. CD 10/13, under LB.

Western Hills Development Co., Inc., 4003 Gallatin Rd., Madison, Tenn. Owner Builds. $500,000, Sutherland Heights RESIDENTIAL SUBDIVISION, Section 3, NASHVILLE, TENN.

† **Fred E. Hicks Constr. Co.**, 4520 Clinton Hy., Knoxville, Tenn. LB $523,350. installation water distr. sys. exten. for Oakridge Gaseous Diffusion Plant, IFB 401-59-4A, OAK RIDGE, TENN. U. S. Atomic Energy Comn., P. O. Box E, Oak Ridge, Tenn. Bids Nov. 25. CD 11/13.

MIDDLE WEST

BUILDINGS—BA

▲ **Wis., Stevens Point**—PHYSICAL EDUCATION—BA 1/16—Wisconsin State Colleges Bldg. Corp., Madison, 1 story bsmnt., 236 x 243 ft. physical education bldg. $1,000,000. Schubert, Sorensen & Assocs., 308 Hoeschler Bldg., La Crosse, archts. CD 7/11.

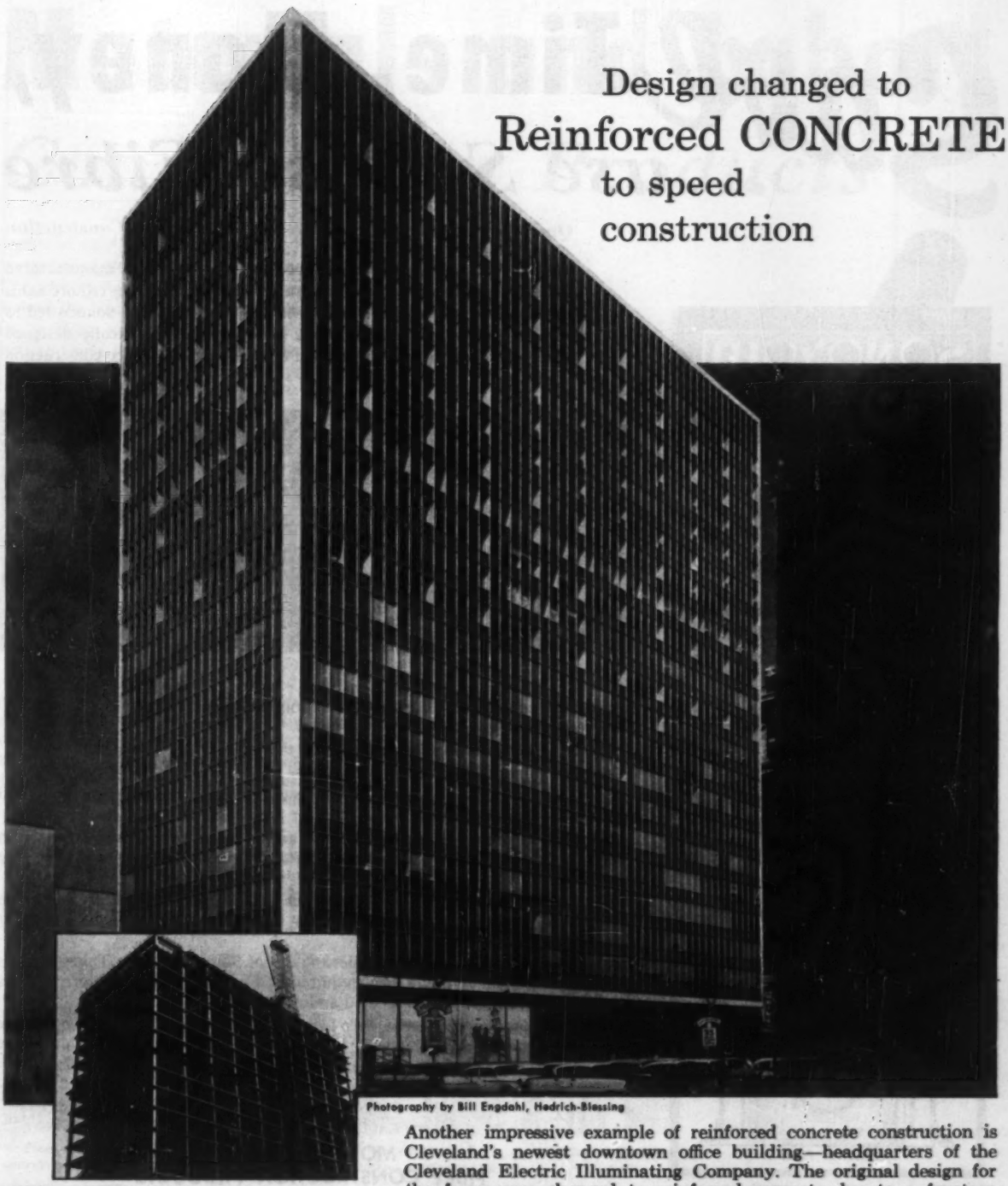
Ill., Bourbonnais—DORMITORY—BA 1/20—Olivet Nazarene College, 45 Marsille, 4 story, brick dormitory bldg. $400,000. Gregg & Briggs, 1st National Bank Bldg., Peoria, archts. CD 7/4.

BUILDINGS—SLC

▲ **Ill., Northbrook**—SHOPPING CENTER—Northbrook Commercial Trust, 824 Waukegan Rd., soon lets contract Northbrook Meadows Shopping Center, incl. 22 units, sewers, water mains, parking, Cherry and Church Sts. $1,500,000. Clarence L. Dahlquist, 1625 Glenview Rd., Glenview, archt. CD 8/7.

(Continued on page 106)

Design changed to Reinforced CONCRETE to speed construction



Photography by Bill Engdahl, Hedrich-Blessing

CLEVELAND ELECTRIC ILLUMINATING BUILDING
Architects: Carson & Lundin, New York City
Engineers:
McGeorge, Hargett & Associates, Cleveland
Contractor:
George A. Fuller Company, New York City

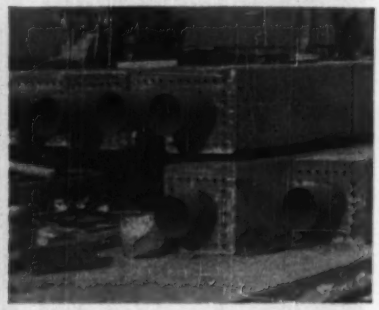
Another impressive example of reinforced concrete construction is Cleveland's newest downtown office building—headquarters of the Cleveland Electric Illuminating Company. The original design for the frame was changed to reinforced concrete due to a fourteen months' delivery date for structural members. As the foundation soil was water-soaked clayish sand, with bedrock 206 feet down, the building was "floated" on a reinforced concrete mat placed 18 feet below the street. Before you build, investigate this economical, flexible, and timesaving medium of construction.

CONCRETE REINFORCING STEEL INSTITUTE
38 South Dearborn Street, Chicago 3, Illinois

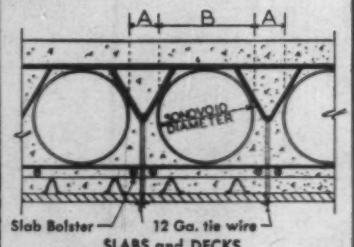
Save Time, Money, ...use Sonoco Fibre

Quality-Engineered Products for Economical Construction

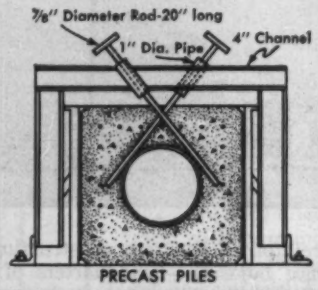
Sonoco's Fibre Construction Products are precision-manufactured under a rigid quality control system to meet the exacting requirements of the industry. Years of research in the laboratories of Sonoco led to the development of these low-cost products . . . specifically designed to assist contractors, reduce the cost of construction, reduce construction



Simple methods of Placing and Hold down to prevent flotation.



SLABS and DECKS



PRECAST PILES

In concrete construction, form voids in concrete members with SONOVOID Fibre Tubes

. . . best way to economize in man-days on the job

. . . best way to save on over-all cost.

The use of the voided concrete system reduces weight of concrete floor and roof slabs of buildings and cast-in-place or precast bridge decks.

You'll save concrete and reinforcing steel too because these low-cost SONOVOID Fibre Tubes displace low-working concrete at the neutral axis without impairing structural strength.

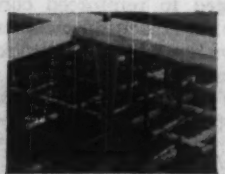
And because less concrete is required per square foot, greater areas can be formed and poured at one time . . . faster construction means savings in labor and money!

For precast, prestressed concrete piles the use of SONOVOID Fibre Tubes reduces the amount of concrete and steel required and reduces the weight of the piles so that they are more easily handled and driven.

Order SONOVOID Fibre Tubes in sizes from 2.25" to 36.9" O.D. Unless otherwise specified shipment will be made in 18 ft. lengths. End closures available. Write for slab design tables and complete technical information.

MORE SONOCO FIBRE CONSTRUCTION PRODUCTS

DUROPIPE Bituminized Fibre Pipe



Anchor Bolt Protectors

Sonopipe Sleeves

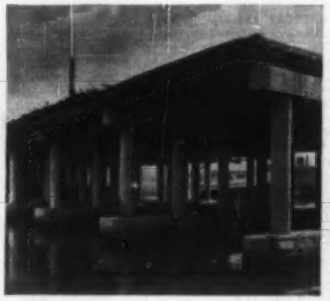
Sonomold Concrete Test Cylinder Molds

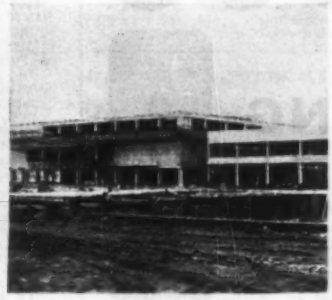
Dowel Rod Sleeves

Materials and Labor!

Construction Products

time and save expensive materials. For engineers and architects, the versatility of these products permit new design and structural features. For owners, obviously, their use results in a saving in overall cost. Follow the lead of other successful contractors from coast to coast . . . use architect and engineer approved Sonoco Fibre Construction Products and save time, money, materials and labor!





Whenever there's a round column of concrete to be formed, there's a low-cost Sonotube Fibre Form to do the job faster and more economically than by any other method.

Whether the columns are for a building, parking garage, school, hospital, church, bridge or overpass . . . makes no difference because Sonotube Fibre Forms are available in sizes from 2" to 48" I.D.

Choose from 3 types:

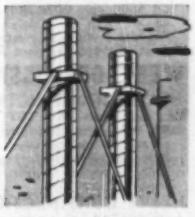
Seamless (Pat. pend.) a premium form for finished columns
"A" Coated—standard form for exposed columns
"W" Coated—for unexposed columns.

Unless other lengths are specified shipment will be made in standard 18 ft. lengths.

Lightweight and easy to handle

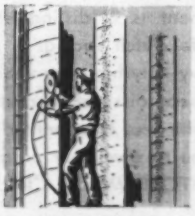
Can be sawed to size on the job

Place tubes by conventional methods



Only minimum bracing is required

Pour by normal method at normal rate



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Construction Products

SONOCO PRODUCTS COMPANY

3434

(Continued from page 102)

▲ Ind., Michigan City—APARTMENT—Michigan City Housing Auth., Court House, soon lets contract, 7 story, row housing, management and maintenance bldg., sewers, water mains, electric distr. sys., paving, Proj. 19-1, $2,250,000. Beine-Hall & Currant, 607 Broadway, Gary, archts. CD 7/3.

HEAVY CONSTRUCTION—LB & CA

▲ OHIO — State Hy. Dpt., Columbus, Zone 15, Bids opened 12/9.

O.—Sutton & Stewart, Inc. and Hatcher Bros., Inc., 841 National Rd., Bridgeport, O., LB $1,355,579, est. $1,374,200 (5 bidders) Type T-71 and structure 5.43 mi. SR 7-(14.03014.39) (17.71-21.12) F-617(7) Village of Clarington, Proj 641, Monroe Co.; LB $298,805, est. $349,200 (10 bidders) Type T-35 on B-119 and structure 0.726 mi. SR 148-(24.63-25.19) Proj. 645, Belmont Co.;

O.—The Koski Constr. Co., 242 Center St., Ashtabula, O., LB $800,052, est. $828,100 (3 bidders) Type T-35 and structure 4.112 mi. SR 534, (17.02-21.40) S-1146(1) City of Geneva, Proj. 632, Ashtabula Co.;

O.—Visintine & Co. and Complete General Constr. Co., 1315 Edgehill Rd., Columbus, O., LB $6,989,000, est. $7,209,200 (3 bidders) Type T-71 and structures 5.948 mi. SR 1-25.33 ACI-1105 (4) City of Columbus, Proj. 635, Franklin Co.;

O.—C. F. Replogle Co., P.O. Box 308, Circleville, O., LB $3,318,224, est. $3,768,000 (6 bidders) Type T-71 and structures 3.559 mi. USR 25-13.84 ACI-1101 (17) Villages of Evendale, Glendale, Sharonville, Proj. 636, Hamilton Co.;

O.—S. J. Groves & Sons Co., 500 Wesley Temple Bldg., Minneapolis, Minn., LB $2,084,592, est. $2,133,800 (9 bidders) Type T-71 and structures 3.031 mi. SR 44-1.70 F-388 (10) S-1012(8), Proj. 638, Lake Co.;

O.—The W. J. Johnson Constr. Co. & Assocs., P.O. Box 6668, Bexley Station, Columbus, O., LB $1,644,362, est. $1,704,500 (3 bidders) Type T-71 and structure 1.303 mi. SR 4-19.73, U-681(19), City of Dayton, Proj. 642, Montgomery Co.;

O.—Wander & Mason, Inc., 1028 Proprietors Rd., Worthington, O., LB $4,027,457, est. $4,935,700 (11 bidders) Type T-71 and structures 2.985 mi. USR 62-20.83, ACI-1093(5) FU 0978(5), City of Canton, Proj. 644, Stark Co. CD 12/1.

Shaw-Comer Constr. Co., 7016 Euclid Ave., Cleveland 3, O., LB $766,649 (4 bidders), Lakewood Heights Blvd. owerpass, CLEVELAND, O. Comrs. Cuyahoga Co., County Admin. Bldg., 1219 Ontario St., Cleveland 13, O. Bids Dec. 8. CD 11/11.

A. Gaudio & Sons, 23500 Lakeland Blvd., Cleveland 23, O., CA $568,453, Babbitt Rd. Sanitary Sewer, EUCLID, O. City of Euclid, City Hall, 585 E. 222 St., Cleveland 23, O. CD 10/6, under LB.

▲ D. W. Winkelman & Co., 205 Harrison St., Syracuse, N. Y., LB $1,147,936, est. $1,101,824 (2 bidders) apron and taxiway paving, Clinton County Air Force Base, ENG-46-022-59-12, WILMINGTON, O. U. S. Eng., 237 4th Ave., Huntington 18, W. Va. Bids Dec. 11. CD 11/13.

▲† Centex Constr. Co., 4606 Greenville Ave., Dallas 6, Tex., LB $3,992,192, 250 unit Capehart HOUSING Bunker Hill Air Force Base, Inv. 12-621-59-22, PERU, IND. Procurement Office, Bunker Hill Air Force Base, Ind. Bids Dec. 9, CD 12/1.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs.,

Kenny Constr. Co., 3220 Oakton St., Skokie, Ill. CA $777,655 storm sewer 1.73 mi. on Lake St. extens. Congress St. Expressway, Cook Co. CD 11/28, under LB.

▲ ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield,

Chatham Paving Co., 8542 S. State St., Chicago, Il., CA $1,259,385 concrete base course 2.31 mi. and 3-span bridge, on Ill 55 (Cermak Rd.) Cook Co. Bids Oct. 31, awarded Dec. 10. CD 10/15.

DeLaval Steam Turbine Co., 1225 S. Harlem Ave., Forest Park, Ill., LB $713,000 (2 bidders) supply two 800 MGD steam turbine pumps, Mayfair Water Pumping Station, CHICAGO, ILL. Dpt. Purchases, City of Chicago, City Hall, Chicago 2, Ill. Dick Van Gorp, 320 N. Clark St., Chicago 10, Ill., ch. engr. Bids 12/9. CD 1/30/57.

Paschen Bros. Constr. Co., 2739 N. Elston Ave., Chicago, Ill. CA $807,000, coal handling equip. in West-Southwest Tr. Works., CHICAGO, ILL. Metropolitan Sanitary Dist. of Chicago, 100 E. Erie St., Chicago, Ill. CD 12/10, under LB.

BUILDINGS—LB & CA

▲ Repp & Mundt, Inc., 1604 Cottage Ave., Columbus, Ind., CA Est. $1,750,000, general contract 2 story, 260 x 440 ft. and 120 x 220 ft. rein.-con., steel MFG. FACTORY and WAREHOUSE add'n., COLUMBUS, IND. Cummins Engine Co., Inc., Fifth and California Sts., Columbus, Ind. Bids Nov. 20. CD 11/6.

▲ Power Constr. Co., 125 S. Marion St., Oak Park, Ill., LB $1,499,607 (10 bidders), general contract 45-classroom, Donald E. Gavit JUNIOR-SENIOR HIGH SCHOOL, 175 St. and Northcote Ave., HAMMOND, IND. Hammond Public Schools, 5935 Hohman St., Hammond, Ind. Bids Dec. 8, CD 11/18.

▲ Gust K. Newberg Constr. Co., 2040 N. Ashland Ave., Chicago, Ill., LB $12,347,000 (4 bidders) general contract, EXPOSITION HALL, Lakefront, CHICAGO, ILL. Metropolitan Fair & Exposition Authority, 208 S. LaSalle St., Chicago, Ill. Bids Dec. 12, CD 11/14, under unclassified.

American Bridge Div., U. S. Steel Corp., 208 S. La Salle St., Chicago, Ill., LB $2,337,000 (3 bidders) structural steel contract EXPOSITION HALL (Chicago, Ill.);

Dell Corp., 9003 Waukegan St., Morton Grove, Ill., LB $1,058,000 (17 bidders) heating and pipe-fitting contract EXPOSITION HALL (Chicago, Ill.);

Anderson & Litwack Co., 530 Hyde Park, Hillside, Ill., LB $1,337,000 (8 bidders) ventilation contract EXPOSITION HALL (Chicago, Ill.);

Great Lakes Plumbing & Heating Co., 4521 Diversey St., Chicago, Ill., LB $725,000 (13 bidders) plumbing, outside water and sewer work contract EXPOSITION HALL (Chicago, Ill.);

Fischback, Moore & Morrissey, Inc., 173 W. Madison St., Chicago, Ill. LB $2,900,000 (13 bidders) electrical contract EXPOSITION HALL (Chicago, Ill.)

▲ Wm. E. Schweitzer & Co., 2207 Dodge Ave., Evanston, Ill., CA $4,349,000, CHRIST COMMUNITY HOSPITAL, incl. macam. and concrete paving, curbs, gutters, 95th St. and Kilbourne Ave., OAK LAWN, ILL. Evangelical Hospital, 5121 S. Morgan St., Chicago, Ill. CD 12/10, under LB.

Cerlina Constr. Co., 370 Oaklawn St., Elmhurst, Ill. CA $850,000, part 1 and 2 story PHYSICAL EDUCATION BLDG., incl. 60 x 90 gymnasium, 28 x 75 swim pool, club room, ELMHURST, ILL. Central Y.M.C.A., 19 S. LaSalle St., Chicago 3, Ill. E. B. White, 19 S. LaSalle St., Chicago 3, Ill., archt. Ekroth Mortarano & Akroth, 5315 W. Devon Ave., Chicago, Ill., engr. Awarded Dec. 8. CD 11/13/56.

Klarich Constr. Co., 9009 S. Western Ave., Chicago, Ill., CA $500,000, BOWLING ALLEY, RESTAURANT; 4200 42 W. 95th St., OAK LAWN, ILL. Oak Lawn Bowl Fox, Inc., 9009 S. Western Ave., Chicago, Ill. Ralph Ernst, 9009 S. Western Ave., Chicago, Ill., archt.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

Mo., St. Louis—AIRPORT IMPRVS.—BA 1/13—City, Bd. P. Service, 304 City Hall, Zone 3, resurf. apron pavements and taxiways in vicinity of Old Terminal Bldg. at Lambert-St. Louis Municipal Airport. $85,750. Horner & Shifrin, 1221 Locust St., Zone 3, engrs. CD 10/31.

HEAVY CONSTRUCTION—LB & CA

▲ NEBRASKA—State Dpt. Rds. & Irrigation, Lincoln, Bids opened 12/11,

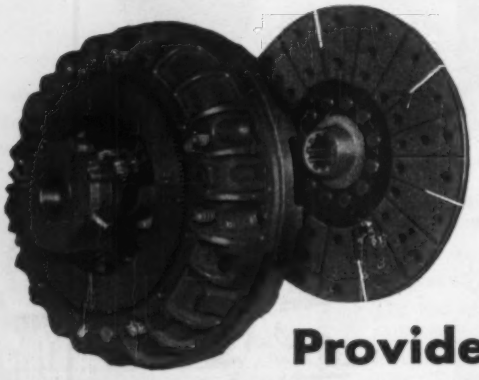
Neb.—Peter Kiewit Sons' Co., 1024 Omaha National Bank Bldg., Omaha, Neb. LB $78,013, gravel-detour pavement, bridge guard rail 0.1 mi. Bennington-Omaha Rd., Proj. S-187 (7) Douglas Co.; LB $763,898, detour pavement, culverts, 0.7 mi. Lincoln-Omaha Rd., Proj. I-880-9 (31) Douglas Co.;

Neb.—Missouri Valley Constr. Co., W. 2nd St., Grand Island, Neb. LB $158,588, gravel-detour, culverts, granular subbase course and soil-aggreg. bit concrete, b. conc. 4.9 mi. Hordville-Polk Rd. Proj. S-285 (4) Hamilton and Polk Counties; LB $256,069, armor coat, bit. sand S. C. 11.2 mi. Stapleton-Thedford Rd., Proj. S-80 (9) Logan Co.; LB $191,832, pavement, culverts, guard rail, granular fill and shoulder constr. 0.5 mi. Bridgeport South Rd., Proj. S-376 (5) Morrill Co.;

Neb.—Arnold Swanson Co., Hy. 6 and 281, Hastings, Neb., LB $295,051, grading, detour, guard rail, subgrade, reconstr., gran. subbase course, soil aggreg. bit.

ROCKFORD

NEW MORLIFE® CLUTCH FACING



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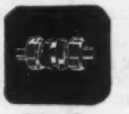
Heavy Duty Spring Loaded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Heavy Duty Over Center

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Speed Reducers

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Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

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CLUTCHES

concrete and shoulder constr., b. conc. 8.9 mi., Arapahoe South Rd., Furnas Co. Proj. S-368 (4); LB $299,715, grading, granular subbase course and crushed limerock bit. concrete, b. conc. 6.5 mi. Wayside-Chadron Rd., Proj. F-435 (7) Dawes Co.;

Neb.—**Abel Constr. Co.**, 1815 Y St., Lincoln, Neb. LB $426,307, grading, gravel-detour, subgrade reconstr., granular fill, granular subbase course soil-aggreg. bit. concrete and shoulder constr., b. conc. 9.5 mi. Swedeburg-Ashland, Ithaca South, Projs. S-134 (4) S-134 (5) S-801 (1) Saunders Co.;

Neb.—**Knight Bros.**, Chapman, Neb. LB $230,519. armor coat, bit. sand surf. course 7.9 mi. Greeley-O'Neill Rd., Proj. F-313 (11), Wheeler Co. CD 12/3.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened 12/10,

Tex.—**Brown & Root, Inc.**, P.O. Box 3, Houston, Tex., LB $1,152,061, widen, etc., 13.220 mi. Hy. US 90, Proj. U 512 (26) Harris Co.; LB $799,128, grade, etc., 13.719 mi. Hy. US 183, Proj. F 183 (10) Gonzales and Dewitt Counties, CD 11/19; LB $172,644, hot mix b. conc. 10.963 mi. Hy. US 90, Proj. C 271-6&7-11&34, Harris Co., CD 11/25;

Tex.—**Cage Bros.**, 6959 San Pedro Ave., San Antonio, Tex., LB $394,414, grade, etc., 14.441 mi. Hy. FM 669, Proj. S 534 (2), Borden Co.;

Tex.—**R. B. Smith, Inc.**, 3702 Glen Haven St., Houston, Tex., LB $580,374, grade, etc., 10.178 mi. Hy. U.S. 69, Proj. F 355 (11), Hardin Co.;

Tex.—**Henry L. Stafford**, Box 1047, Lubbock, Tex., LB $1,054,513, grade, etc., 40.264 mi. Hy. U.S. 60 and Spur 270, Proj. F 639 (9), Palmer and Castro Counties;

Tex.—**W. L. Barnes Contr. & N. L. Larson**, Box 9008, Austin, Tex., LB $1,087,671, grade, etc., 3.756 mi. Hy. Loop 293, U.S. 183 and S.H. 71, Proj. R Rd-F-V-18 (1), Travis Co.;

Tex.—**Bushman Constr. Co.**, 3706 Broadway, Kansas City, Mo., LB $1,724,543, grade, etc., 3.448 mi. Hy. IH 10, Proj. I 10-8 (12) 897, Orange Co.;

Tex.—**Austin Bridge Co.**, P. O. Box 1590, Dallas, Tex. LB $3,761,512, grade, etc. 6.837 mi. Hy. IH 20, Proj. I 20-2 (16) 274, Taylor Co.;

Tex.—**L. K. & J. A. Long & John T. Leislie**, P. O. Box 183, McKinney and Bailey, Tex. LB $311,863. grade, etc. 5.809 mi. Hy. FM 2450, 156, 455 and 1173. Proj. S 2258 (1) & S 2259 (1), Denton Co., all foregoing. CD 11/25.

▲ † **C. H. Leavell & Co.**, 1900 Wyoming Ave., El Paso, Tex. LB $1,874,781 (Sched. A.). G.M. Range Training facilities, consisting 12 H-shaped barracks, 2 bldgs., etc., ENG-29-005-59-27, Fort Bliss, EL PASO, Tex. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Dec. 3. CD 10/28;
Farnsworth & Chambers, Inc., Box 74, Houston, Tex. LB $966,232, Sched. B, (El Paso, Tex.)

▲ † **Western Paving Constr. Co.**, 5105 Washington St., Denver, Colo., and **Eagle Constr. Co.**, Loveland, Colo. CA $6,300,742, est. $5,376,457, powerhouse and switchyard for 2nd power plant at Fort Peck Dam, Valley Co., ENG-32-015-59-4, MONTANA. U. S. Eng., Garrison, Riverdale, N. D. Bids Nov. 20, awarded Dec. 9. CD 12/9, under LB.

BUILDINGS—LB & CA

▲ **The Austin Co.**, 16112 Euclid St., Cleveland, O., CA Est. $1,500,000, LABORATORY PLANT addns., incl. 40,000 sq. ft. pharmaceutical bldg. addn.; 15,000 sq. ft. chemical plant expansion; steam capacity boiler plant to be tripled; install 250,000 gal. sprinkler sys. reservoir, expansion of roadways and parking, CHARLES CITY, IOWA, Dr. Salsbury's Laboratories, Charles City, Iowa, CD 12/11.

Commonwealth Theaters, Inc., 215 W. 18th St., Kansas City, Mo., rejected bids Nov. 19, 1 unit, 42,900 sq. ft. steel frame, brick, block SHOPPING CENTER incl. parking for 590 Cars, COLUMBIA, MO. LB $422,900. Will re-advertise. CD 12/3, under LB.

Geo. L. Cousins Contg. Co., 875 N. Skinker Bldg., St. Louis 5, Mo., CA $506,950, est. $600,000, 3 story, ground floor 73 x 116 ft. precast concrete blocks, steel MEDICAL CENTER, Florissant Rd. south of Chambers Rd., DELLWOOD (ST. LOUIS 21 P. O.), MO. North Roads Medical Bldg., Inc., c/o Eric W. Smith, Jr. and Robert Entzereth, archts., 8230 Forsyth Blvd., Clayton 24, Mo. Bids Dec. 2. CD 12/10, under LB.

Sharp Brothers, 1014 E. 19th, Kansas City, Mo., LB $609,643, general constr. 4 story, bsmnt., 60,000 sq. ft. 11 x 115 ft. concrete block, brick OFFICE, 34th and Broadway, KANSAS CITY, MO. Old Security Life Ins. Co., 1800 McGee, Kansas City, Mo. Bids Dec. 5. CD 12/2.

Bank Building & Equipment Corp. of America, 1130 Hampton Ave., St. Louis 10, Mo. CA Est. $600,000 design and construct 1 story, bsmnt., 56 x 110 ft. contemporary style BANK on 284 ft. front site, southside Delmar Blvd. in 6600 Block, incl. parking area for 80 cars, UNIVERSITY CITY, MO. Delmar Bank of University City, 6605 Delmar Blvd., University City, Mo. CD 4/25/55.

H. F. Campbell Constr. Co., 9301 Michigan St., Detroit, Mich. CA $600,000 PLANT for Motor Truck Division, PLANT for Farm Equipment Division, and SALES OFFICE, LITTLE ROCK, ARK. International Harvester Co., 812 E. 2 Little Rock, Ark. CD 8/12/57.

Rorick Constr. Co., 905 S. 20th St., Omaha, Neb., CA $803,440, general constr. 3 unit North HIGH SCHOOL addn., OMAHA, NEB. Bd. Educ., 39th and Davenport Sts., Omaha, Neb. Awarded Dec. 8. CD 12/10, under LB.

Dickmann-Pickens-Bond, 3712 W. Okmulgee St., Muskogee, Okla., CA $923,100, Y.M.C.A. and Y.W.C.A. bldgs., MUSKOGEE, OKLA. Young Men's Christian Assn., Bd. Directors, Muskogee, Okla. Awarded Dec. 5. CD 12/10, under LB.

Frank B. Schoeneman, Builder, Coit Rd., Dallas, Tex. Owner Builds. $550,000, 60 APARTMENT UNITS, ARLINGTON, TEX. CD 11/10.

El Paso Natural Gas Co., El Paso Natural Gas Bldg., El Paso, Tex. Owner Builds. $647,000, DEHYDRATION PLANT expansion, BIG SPRING, TEX. CD 12/3.

American Constr. Co., 2128 Welch St., Houston, Tex. CA Approx. $400,000. rein.-con. solid masonry walls Riverside TELEPHONE EXCHANGE, HOUSTON, TEX. Southwestern Bell Telephone Co., 1121 Capitol St., Houston, Tex. CD 1/7.

Gilbert Southbrook Builders, 5512 La Branch St., Houston, Tex. Owner Builds. $480,000, 40 DWELLINGS, Greens Bayou, about 12½ mi. from HOUSTON, TEX. CD 11/14.

▲ **G. E. Bass**, 2715 N. State St., Jackson, Miss. CA $2,000,000. cost plus-fixed fee, constr. 14 story thin wall constr. aluminum and glass panels, concrete frame and floors, etc. GULF OFFICE BLDG., MIDLAND, TEX. R. E. Dumas Milner, 3691 Canton Rd., Jackson, Miss. (Correction—contractor's name). CD 11/11, under CA.

A. Brown, 628 Dooly Bldg., Salt Lake City, Utah, LB $505,465, est. $500,000, HIGH SCHOOL addn., alterations, COKEVILLE, WYO. School Dist. No. 5, Lincoln Co., Cokeville, Wyo. Bids Dec. 4, CD 11/26.

FAR WEST

BUILDINGS—BA

Wash., **Seattle**—SCHOOL—BA 1/8—Highline School Dist. 401, 253 S. 152 St., 2-level 149 x 191 ft. and 72 x 120 ft. masonry South Angle Lake Elementary School. $500,000. Plans deposit $40. Extended date. Bassetti & Morse, Tower Bldg., Seattle, Zone 1, archts. CD 12/8.

HEAVY CONSTRUCTION—LB & CA

IDAHO—State Hy. Dpt., Boise,
Lonnie E. Smith Constr. Co., Twin Falls, Idaho, CA $521,601, constr. concrete underpass, 2 concrete bridges, 4 concrete overpasses interstate 15W and 80N, Cassia Co., Bids Dec. 2, Awarded Dec. 9, CD 12/9, under LB.

▲ **IDAHO**—State Hy. Dpt., Boise, Bids opened 12/9,
Morrison-Knudsen Co., Inc., 319 Broadway Ave., Boise, Idaho, and **Duffy Reed**, Twin Falls, Idaho (joint bid), LB $1,279,274, constr. 4-lane divided roadway, 26 ft. concrete overpass, 316 ft. underpass and plantmix bit. surf. 3.077 mi. Interstate No. 80N and plantmix bit. surf. 0.18 mi. U. S. 93 and U. S. 80, Payette Co., CD 11/19.

▲ **IDAHO**—State Hy. Dpt., Boise,
James Reed, 779 S. 2 E St., Salt Lake City, Utah, CA $1,281,999, constr. roadway, plantmix bit. surf., drainage structures and 3 concrete underpasses on 7.813 mi. U. S. Interstate 15 and sealcoating 7.341 mi., Jefferson Co., Bids Dec. 2, awarded Dec. 9, CD 12/9, under LB.

▲ † **H. K. Ferguson Co.**, 120 Montgomery St., San Francisco, Calif., CA Est. $1,000,000, modify and add to utilities, structures and cooling loop in material testing reactor in engineering test area at National Reactor Testing station, Idaho Falls, ARCO, IDAHO, Atomic Energy Comm., Idaho Operations Office, Idaho Falls, Idaho, CD 12/21/56.

▲ † **R. A. Heintz Constr. Co.**, 211 N. E. Columbia Blvd., Portland, Ore., LB $2,242,215, est. $3,247,208, (17 bidders), embankment protection for Spokane, Portland & Seattle Railway as part of Ice Harbor Dam project, Pasco, CIVENG-45-164-59-15, WASHINGTON, U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Dec. 11, CD 11/7.

† **Jensen-Rasmussen & Co.**, Sunnyside, Wash. and **B-E-C-K Constructors**, 3647 Stone Way, Seattle 3, Wash., LB $724,124, est. $748,794 (7 bidders), 150-man READINESS CREW BLDG., Larson Air Force Base, Inv. 59-6, MOSES LAKE, WASH. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Dec. 9. CD 11/21.

▲ **OREGON**—Hy. Comn., By. Bldgs., Salem, Bids opened 12/9,
Ore.—**Warren Northwest Inc.**, Box 5072, Portland, Ore., LB $1,407,104, (15 bidders) paving 11.25 mi. Lebanon Road-Halsey Interchange section of relocated Pacific Hy., FAIP I-5-4(26)216, Linn Co.;
Ore.—**Babler Bros.**, 4617 S. E. Milwaukie Ave., Portland, Ore. LB $148,348 (4 bidders) grading, paving 1.02 mi. FAP F-123(16), Deschutes Co.

† **Sierra Constr. Co.**, P. O. Box 983, Merced, Calif. LB $815,237, est. $988,051 (8 bidders), road relocation, 5 mi. from Stoney Creek to Ridgeville around north side of Trinity Dam Reservoir, Trinity River Div., Central Valley Proj., Spec. 5119, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lewiston, Calif. Bids Dec. 9. CD 10/31.

Martin Bros., Inc., 2525 Concord Ave., Concord, Calif. LB $671,340 (6 bidders), constr. nearly 17 mi. pipe line for 2nd unit irrigation distr. sys. for delivery of Solano Proj. water, FAIRFIELD, CALIF. Solano Irrigation Dist., Fairfield, Calif.

▲ **Stolte, Inc.**, 9967 San Fernando Rd., Los Angeles, Calif. CA $1,208,018. constr. Claremont Storm Drain Bond Issue Proj. 22, Pomona and Claremont, LOS ANGELES, CALIF. Los Angeles Co. Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Nov. 21. CD 11/28, under LB.

† **W. J. Nicholson Co., Inc.**, P. O. Box 390-A, Santa Clara, Calif. LB $883,388 (10 bidders), test chamber and equipment bldg. for 3.5 hypersonic wind tunnel. IFB A-166 MOFFETT FIELD, CALIF. National Aeronautics & Space Admin., Ames Research Center, Procurement Office, Moffett Field, Calif. Bids Dec. 2. CD 11/20.

† **U. S. Eng.**, 1209 8th St., Sacramento, Calif. cancelled bids to have been opened Dec. 23, hydrant fueling sys. (MATS) incl. 8 tank pumphouse, rehabilitating existing 3 tank pumphouse, new piping pits and hydrant outlets in existing MATS apron, Spec. 2461, ENG-04-167-59-25, TRAVIS AIR FORCE BASE, CALIF. Est $800,000. Will re-advertise. CD 11/26.

BUILDINGS—LB & CA

M. Morrin & Sons, 473 W. 2nd St., Ogden, Utah, LB $586,270. 1st phase PHYSICAL SCIENCE BLDG., State University of Applied Sciences, LOGAN, UTAH. Utah State Bldg. Bd., Glen R. Swenson, dir., 419 State Capitol, Salt Lake City, Utah. Bids Dec. 9. CD 12/2.

▲ **Kemp Bros. & George K. Thompson**, 8750 Mettler St., Los Angeles, Calif., LB $2,074,000 (joint venture) (4 bidders), Sunny Hills HIGH SCHOOL, FULLERTON, CALIF. Fullerton Union High Scrool Dist., 201 E. Chapman Ave., Fullerton, Calif. Bids Dec. 10. CD 11/28.

Ernest W. Hahn, Inc., 219 S. Hawthorne Blvd., Hawthorne, Calif. LB $814,900, est. $700,000 (9 bidders), 2 story HOSPITAL, 1437 Lomita Blvd., HARBOR CITY, CALIF. Harbor Osteopathic Hospital, Inc., 25916 W. Western Ave., Los Angeles, Calif. Bids Dec. 8. CD 12/8.

▲ **James Stewart Co.**, Box 1389, 3911 Pacific Hy., San Diego, Calif. CA $1,352,598. const. LABORATORY BLDG. UNIT 3, LA JOLLA, CALIF. University of California at Scripps, La Jolla, Calif. Bids Nov. 13. CD 11/17, under LB.

▲ **W. H. Christensen**, 17814 Parthenia St., Northridge, Calif. CA $2,300,000. Portola JUNIOR HIGH SCHOOL, Ventura and Reseda Blvds., Tarzanna, LOS ANGELES, CALIF. Bd. Educ., 1425 S. Sah Pedro St., Los Angeles, Calif. Bids Nov. 21. CD 11/28, under LB.

▲ **Ekelin & Small Co.**, P. O. Box 8, Salinas, Calif. CA $2,169,954. 18,000 sq. ft. Type I and Type III constr. HIGH SCHOOL, incl. gym, 5 shops, swimming pool, North Salinas, SALINAS, CALIF. Salinas Union High School Dist, c/o supt., 431 W. Alisal St., Salinas, Calif. Bids Sept. 30. CD 10/7, under LB.

CANADA

BUILDINGS—BA

B. C., Prince George—STORE—BA 12/30—Rupert's Land Trading Co., 79 Main St., Winnipeg, Man., rein.-con. Hudson's Bay store addn. $400,000. Trelle A. Morrow, Prince George, archt.

▲ **B. C., Vancouver**—GARAGE—BA 12/31—Hudson's Bay Co., Georgia and Granville Sts., 650-car, concrete, steel parking garage, incl. four level inclined ramp structure, 600 block Seymour St. $1,500,000. Wade, Stockdill & Armour, 475 Howe St., archts.

HEAVY CONSTRUCTION—LB & CA

▲ **Mannix Ltd.**, 737 8th Ave. W., Calgary, Alta., LB $4,220,092, resurf. Runway 02-20, strengthening, widen. 200 ft., 14,000 ft. extens. Runway 11-29, incl. taxiways, aprons, lighting facilities, related work at airport, NAMAO, ALTA. Dpt. Transport, Hunter Bldg., Ottawa, Ont. CD 10/29/57.

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria,
Dawson, Wade & Co., Ltd., 775 Clark Dr., Vancouver, B. C., LB $1,090,929 (16 bidders) constr. 6.06 mi. Fraser River-Abbotsford section 1 Trans-Canada Hy. in Chilliwack Electoral Dist. F. T. Brown, Parliament Bldgs., Victoria, B. C., engr. CD 10/30/46.

Canadian Vickers Ltd., Maisonneuve, Montreal, Que. CA $951,575, manufacture and installation supersonic nozzle and Jack Station sub-assemblies for high speed wind tunnel, at National Aeronautical Establishment, Royal Canadian Air Force Base, UPLANDS, OTT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. CD 10/1, under LB.

Charles Duranceau Ltee, 2645 J. Hertel St., Montreal, Que., LB $655,288 (24 bidders) transit shed, Sections 62-65, Montreal Harbor, MONTREAL, QUE. National Harbors Bd., West Block, Parliament Bldgs., Ottawa, Ont. Bids Dec. 4. CD 11/21.

BUILDINGS—LB & CA

F. O. White Contg. Co., Ltd., 661 Richards St., Vancouver, B. C., CA $500,000, 3 story, concrete, frame HOTEL, 2636 E. Hastings St., VANCOUVER, B. C. Atlas Developments Ltd., 661 Richard St., Vancouver, B. C. A. F. Debicki, c/o 661 Richards St., Vancouver, B. C., archt.

Luney Bros. & Hamilton Ltd., 825 Bay St., Victoria, B. C. CA $664,894 concrete HIGH SCHOOL, Esquimalt, VICTORIA, B. C. School Dist. No. 61, Victoria, B. C. Bids for 13, awarded Dec. 3. CD 11/27, under LB.

McKay-Cocker Constr. Ltd., 294 Dundas St., London, Ont., CA $731,000 (9 bidders) 3 story, bsmnt., 64 x 97 ft. TELEPHONE BLDG. exten., LONDON, ONT. Bell Telephone Co. of Canada, 393 University Ave., Toronto, Ont. Marani & Morris, 1259 Bay St., Toronto, Ont., archts. Awarded Dec. 5.

Damien Boileau Ltee., 705 Beaumont Ave., Montreal, Que., CA Est. $500,000, 2 story, bsmnt., T-shaped, concrete, brick, frame SCHOOL and RECREATION HALL, St. Michel Blvd., MONTREAL, QUE. Montreal Catholic School Comn., 3737 Sherbrooke St. E., Montreal, Que. Paul M. Lemieux, 1846 Dorchester St. W., Montreal, Que., archts. Beaulieu, Trudeau & Assocs., 6650 Darlington Ave., Montreal, Que., engrs. Awarded Dec. 3.

Odeon Constr. Co. Ltd., 6555 St. Lawrence Blvd., Montreal, Que., Owner Builds, $700,000, 55 brick, stone HOUSES, ST. ROSE EAST, QUE.

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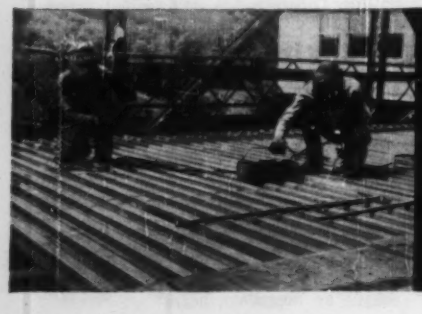

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Highway Guard Rail • Bridge Flooring
Steel Forms for Concrete Bridge Decks
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Metal Doors & Frames • Metal Buildings

▲ **Roseview Investment Corp.**, c/o Edouard W. Tremblay, archt., 3480 Cote des Neiges Rd., Montreal, Que., Owner Builds. $1,777,777, 18 three story, block frame, dry wall, brick veneer, APARTMENTS, ST. VINCENT DE PAUL, QUE.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **GUATEMALA**—Office of Bienes Nacionales Licitaciones y Asuntos Alemanes, Guatemala City, Guatemala—**Thompson Cornwall, Inc.**, Chrysler Bldg., New York, N. Y., U. S. A., LB $2,499,625, surf. treatment base course and bit. surf. tr. from Patzicia to Mexican Border, Project 28, for Bureau P. Rds., Dpt. Commerce, Inter-American Hy. Office, Wash., D. C., U. S. A. CD 11/20;
Guatemala—**Divalso**, Guatemala City, Guatemala, LB $2,113,775, preservative treatment same project (Guatemala).

PROPOSED PROJECTS

WATER SUPPLY

▲ **Alaska, Juneau**—City, City hall, voted bonds Nov. 25, imprv. supply and distr. system, $1,500,000. Cornell, Howland, Hayes & Merryfield, Corvallis, Ore., consult. engrs. CD 8/2/57.

▲ **O., Oberlin**—City, City Hall, water plant and reservoir, $1,700,000. Burgess & Niple, 2015 W. 5 Ave., Columbus, consult. engrs.

▲ **Tenn., Knoxville**—East Knoxville Utility Dist., 4905 Straw Plains Pike, water distr. dist. $1,400,000. A. E. Bost, 408 Clinch Ave., engr.

SEWERS, WASTE DISPOSAL

▲ **Iowa, Mason City**—City, City Hall, sewage disposal plant and sewer main extens. $2,000,000.

▲ **Ky., Lexington**—City, City Hall, Proj. No. Ky. 15-P-3013, imprv. collection sys., sewage treatment plant addn. Cane Run Outfall. $4,800,000.

▲ **Mich., Detroit**—City, City Hall, $30,000,000 bond election Feb. 16, three year sewer construction program to start 1961.

▲ **Mo., Independence**—City, City Hall, voted $1,750,000 bonds Nov. 25 sewer trunk lines; defeated $1,750,000 bonds, sewerage sys. imprvs. Midwest Consulting Engineers & Architects, 4233 Blue Ridge Blvd., Kansas City 33, Mo., consult. engrs. CD 10/1.

▲ **Neb., Omaha**—City, City Hall, 19th and Farnam Sts., South Omaha Treatment plant northwest of Mandan Park, $7,750,000, Henningson, Durham, Richardson, 2962 Harney St., consult. engrs.; North Interceptor Sewer extending between Bridge and Grace Sts. $2,500,000, Kirkham, Michael & Assoc., 508 S. 19th St., Omaha, consult. engrs. CD 11/10.

▲ **N. J., Camden**—City, City Hall, garbage and refuse incinerator. $3,000,000. To go ahead 1959.

STREETS AND ROADS

▲ **DELAWARE**—State Dpt. Hys., Dover,
New Castle Co.—2.5 mi. Christiana River Interchange, incl. relocating Christiana River and 12 bridges $20,000,000. To go ahead Spring 1959. K. E. Greiner Co., 1106 N. Charles, Baltimore, Md., consult engr. Moran, Proctor, Mueser & Rutledge, 415 Madison Ave., New York, N. Y., directing test borings.

▲ **Ill., Belleville**—Bd. Supervs. St. Clair Co., Court House, 1959 highway constr. program, incl. 5.5 mi. bit. resurf. State St., East St. Louis, grading, resurf. 1 mi. Marybelle Ave., 71 St. to Goetz Dr., East St. Louis, grading, imprv. S. 74 St., Rt. 460 to West Main St., Belleville; bridge approaches Emerald Mound School Rd., on Jack's Run Rd., Eiler Rd. at I. C. R.R. grading, surf. Rt. 159 5.7 mi., drainage facilities SAR No. 29, Brooklyn, Ill. $1,297,000. Devereux H. Murphy, co. supt. hys.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Rehoboth-Swansea—hy. and bridge Interstate Rte. 95E, 200 ft. E. Madison St., Rehoboth to 300 ft. W. Walker St., Swansea, distance 1.1 mi. FA 1-95E (5). $1,500,000.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany 1,
New York Co.—elevated vehicular crosstown road along Canal and Broome Sts., from Miller (West Side) Hy. to Manhattan and Williamsburg Bridges, 1st Section, Avenue of Americas to Bowery; 2nd Section, West St. to 6th Ave.; 3rd Section, Bowery at Broome St. $46,729,000. Madigan-Hyland, 28-04 41st Ave., Long Island City, engrs. CD 1/20/55, under Manhattan Boro, as owner.

AIRPORTS

▲† **Pa., Johnsville**—INTEGRATED SYSTEM FACILITIES—Dpt. Navy, Phila. Naval Base, Phila., plans by Von Storch & Burkavage, archts.-consult. engrs., 117 S. 17th St., Phila. and Waverly, integrated sys. facilities at Naval Air Depot. $21,000,000 (no appropriation). CD 1/20/54.

† **Tex., Waco**—HOUSING—Procurement Office, Jas. Connally Air Force Base, Waco, rehabilitation, 500 Wherry Housing units. $500,000-$1,500,000. CD 8/21/56.

▲ **Wash., Seattle**—TERMINAL—Port of Seattle, Bell St. Terminal, Zone 1, terminal expansion to provide 12 jet positions and 2-level operation at Seattle-Tacoma Airport. $4,000,000. Work to begin in 1960. G. T. Treadwell, ch. engr.

(Continued on page 110)

The Mathews barrel, containing all working parts of the hydrant, is readily removed for inspection or repair by simply unscrewing it from the elbow and withdrawing it through the protection case.

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I can show you easily and quickly with this scale model. See? When a Mathews is broken by a skidding automobile, you can slip in a new barrel in a matter of minutes, *and without excavating*. It's a real safety feature for the community—allows only momentary interruption of neighborhood fire protection.

And these additional quality features help keep the Mathews at the head of the line:

- Compression-type valve opens against water pressure—a positive leakproof construction
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MATHEWS HYDRANTS—by **R. D. WOOD COMPANY**

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

Rockwood shopping center of Fred Meyer, Inc., Portland, Oregon, is 216'x313'-6" in size, with structural framing of cantilevered glulam girders which provide 44'-9" bays. Heavy timber decking is placed over natural finish glulam purlins spaced at 8'.
Architects: Jensen and Gilham, Portland, Oregon.
Andersen & Westfall, Portland, were general contractors.

JOB DATA: Exterior walls: stone, painted concrete, ceramic tile, asbestos panels, glass. **Interior walls:** gypsum board, glass. **Heating:** gas fired forced air. **Ventilation:** full air conditioning. **Lighting:** Fluorescent fixtures. **Volume:** 1,151,172 cubic feet. **Floor area:** 67,716 square feet. **Cost:** approximately 10% below prevailing costs of similar structures in this area.

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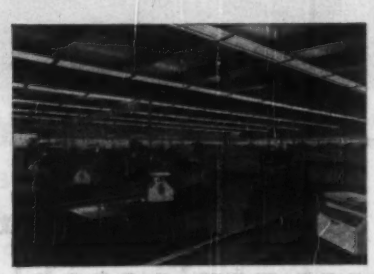

Interior view shows wide span bays which provide unhampered display space and facilitate customer traffic.

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(Continued from page 108)

▲ Man., Flin Flon—AIRPORT—Dpt. Transport, Hunter Bldg., Ottawa, Ont., airport. $2,000,000. CD 10/24/49.

AMERICANS ABROAD

▲ Japan, Tokyo—POWER STATION—Tokyo Electric Power Co., Tokyo, thermal power station, Tokyo Bay, near Yokosuka, $61,000,000. International General Electric Co., 150 E. 42 St., New York 17, N. Y., U.S.A., will supply first 265,000 kw. turbine unit. Ebasco Services, Inc., 2 Rector St., New York, N. Y., U.S.A., consult. engr.

PUBLIC BUILDINGS

▲ Calif., Los Angeles—PHYSICAL EDUCATION FACILITIES—State Div. Architecture, 1120 N. St., Sacramento, outdoor physical educ. facilities, Los Angeles State College of Applied Arts & Sciences, State Dpt. Educ. $1,104,700. CD 7/25/57.

▲ Calif., San Fernando—SPEECH-DRAMA, etc.—State Div. Architecture, 1120 N. St., Sacramento, speech-drama bldg. $2,503,600; cafeteria, $1,557,000, San Fernando State College, State Dpt. Educ.

▲ Colo., Denver — ALARM CENTER — City and Denver Co., City and Co. Bldg., combined repair and alarm center, $2,215,000.

▲ Colo., Denver—JAIL—City and Denver Co., City and Co. Bldg., county jail addn., E. Smith Rd. $2,000,000. Constr. in 1960.

▲ Conn., New Britain—SCHOOL—State P. Wks. Dpt., 165 Capitol Ave., plans by Henry Ludorf, 96 Elm St., Hartford, steel, rein.-con. brick vocational-technical school, Slater Rd. $3,200,000. Walter J. Douglas Assocs., 1009 Farmington Ave., West Hartford, consult. engrs. Fred S. Dubin Assocs., 178 S. Whitney St., Hartford, mech. engrs. CD 8/19.

▲ Ill., Chicago—SCHOOLS—Bd. Educ., 228 N. LaSalle St., plans by Furst, Maher & McGrew, 626 Grove St., Evanston, school, $1,250,000, CD 5/23; plans by Loewenberg & Loewenburg, 111 W. Monroe St. and S. A. Lichtmann, 134 S. LaSalle St., Zone 3, Hess School, $725,000. CD 3/10.

▲ Ill., Chicago—HOSPITAL—Bd. Comrs. Cook Co., County Bldg., Zone 2, plans by Rich. W. Prendergast, 30 N. Dearborn St., 4 story, bsmnt., L-shaped, rein.-con. hospital, incl. air conditioning. $3,500,000. CD 6/11/57.

▲† Ill., Danville—HOSPITAL—Veterans Admin., Munitions Bldg., Wash., D. C., modernizing hospital. $4,247,000 (no appropriation).

▲ Ind., Gary—LIBRARY—City, City Hall, 2 story, 69,675 sq. ft. library, 5th and Adams Sts., $2,000,000. CD 1/8/56.

▲ Kan., Russell—SCHOOL—Rural High School Dist. No. 7, voted $1,800,000 bonds Nov. 20, high school. Edward M. Fuller, 701 W. 14th Ave., North Kansas City, Mo., archt. CD 11/12.

▲† Mass., Bedford — HOSPITAL IMPRVS. — Veterans Admin., Munitions Bldg., Wash., D. C., modernization program, Phase IV, Veterans Hospital. $1,007,000.

▲ Mass., Lawrence — HOUSING FOR ELDERLY — City Housing Auth., 90 Broadway, plans by Thomas J. Pearson Assoc., 351 Essex St., housing for elderly, 3-sites. $2,000,000.

▲ Minn., Stillwater—SCHOOL—Bd. Educ. voted $2,432,000 bonds Dec. 1, high school, $2,000,000. CD 11/13.

▲† Miss., Biloxi — HOSPITAL IMPRVS. — Veterans Admin., Munitions Bldg., Wash., D. C., modernization program, Phase III, Veterans Hospital. $1,873,000.

Miss., Cleveland — STUDENT HOUSING — State Bldg. Comm., Woolfolk Bldg., Jackson, plans by Biggs, Weier & Chandler, 336 Meadowbrook Rd., Jackson, two 2 story rein.-con. structures, etc., student housing, Delta State College. $925,000.

▲ Miss., Natchez—SCHOOLS—Natchez Separate School Dist., plans by E. L. Malvaney & Assocs., Millsaps Bldg., Box 941, Jackson, and B. W. Martin, 710 Main St., Natchez, 60,000 sq. ft. brick, steel, frame, concrete, etc. Junior High School, $900,000. CD 11/28; plans by James L. Canizarro, First National Bank Bldg., Jackson, and John Turner, 317 Main St., Natchez, Northside Elementary School, $500,000; Southside Elementary School, $500,000; plans by R. W. Naef, 844 North State St., Jackson, Senior High School. $1,000,000.

▲ N. J. Paterson—PARKING GARAGE—Paterson Parking Auth., City Hall, parking garage Main, Fair, Paterson and Ellison Sts. $4,000,000-$7,000,000. Tippetts-Abbett-McCarthy-Stratton, 62 W. 47 St., New York, N. Y., consult., engrs. CD 8/6.

▲ N. J., Scotch Plains—SCHOOL—Bd. Educ., Scotch Plains Twp., approved referendum on project and bonds Nov. 25, addns. to Shakamaxon School, Evergreen School, LaGrande School and new school, $2,385,000. CD 2/5/57.

▲ N. J., Stratford—SCHOOL—Central Camden Co. Regional High School Bd. Educ., plans by F. Herbert Radey, 8th and Market Sts., Camden, Regional Junior-Senior High School. $1,400,000. Bond election Dec. 9.

▲ N. J., Wayne—SCHOOL—Bd. Educ., Township of Wayne, Mt. View, voted $1,993,000 bonds Nov. 24, Junior High School, $1,510,000, LaFayette School addn., $270,750, and Mt. View Schools addn. $212,250. Emil Schmidlin, 586 Central Ave., East Orange, archt. CD 10/28.

▲ New York—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, P. S. 80, Baisley and Merrick Blvds., Queens Boro. $2,200,000.

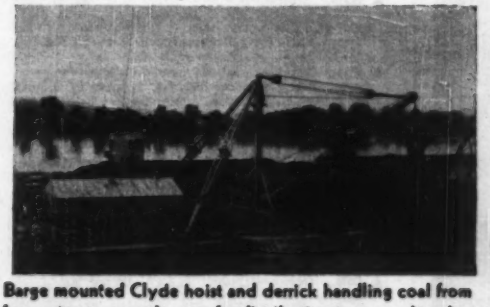
(Continued on page 112)

Clyde Unloader operating at plant of a rural electric cooperative corporation in Kentucky.

Coal handling is simple as 1, 2, 3, with . . .

Three specialized Clyde units offer lowest cost coal handling

Self-propelled Clyde Whirley unloading from barges to stock piles and storage bins along river site.



Barge mounted Clyde hoist and derrick handling coal from barges to conveyor hopper for distribution to cars and trucks.

1 CLYDE UNLOADERS

Clyde Unloaders . . . the finest, most modern machines for high speed handling of bulk materials from barges or ships direct to distribution hopper in tower. Unloader can be equipped with self-propelling trucks or be stationary mounted. Three standard sizes with free digging capacities up to 1200 tons per hour.

2 CLYDE WHIRLEYS

Clyde Whirleys are specially designed for efficient, economical and fast cycle rehandling of materials. Their long reaching, full-revolving booms permit servicing exceptionally large areas. Materials can be unloaded from barge or ship to stock piles, storage bins or loaded directly into cars, trucks or hoppers.

3 CLYDE DERRICKS

Clyde Stiff Leg Derricks powered by Clyde hoists make an ideal combination for low cost, heavy duty material where degree of swing is limited. Anti-friction bearings on Clyde hoists and derricks reduce friction losses, save maintenance costs and permit heavier pay loads to be handled with less power consumption.

"Quality is Always Foremost in Clyde Products. Write for Detailed Bulletins on Any Item."

CLYDE

CLYDE IRON WORKS, Inc.

Established 1900

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HOISTS : DERRICKS : WHIRLEYS : UNLOADERS
BUILDERS TOWERS : CAR PULLERS : ROLLERS

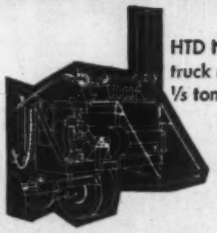
FOR LOW-COST HOT OR COLD
PAVING OR PATCHING IN ANY SEASON

McConnaughay
ASPHALT MIXERS

HTD No. 10
½ ton per batch.

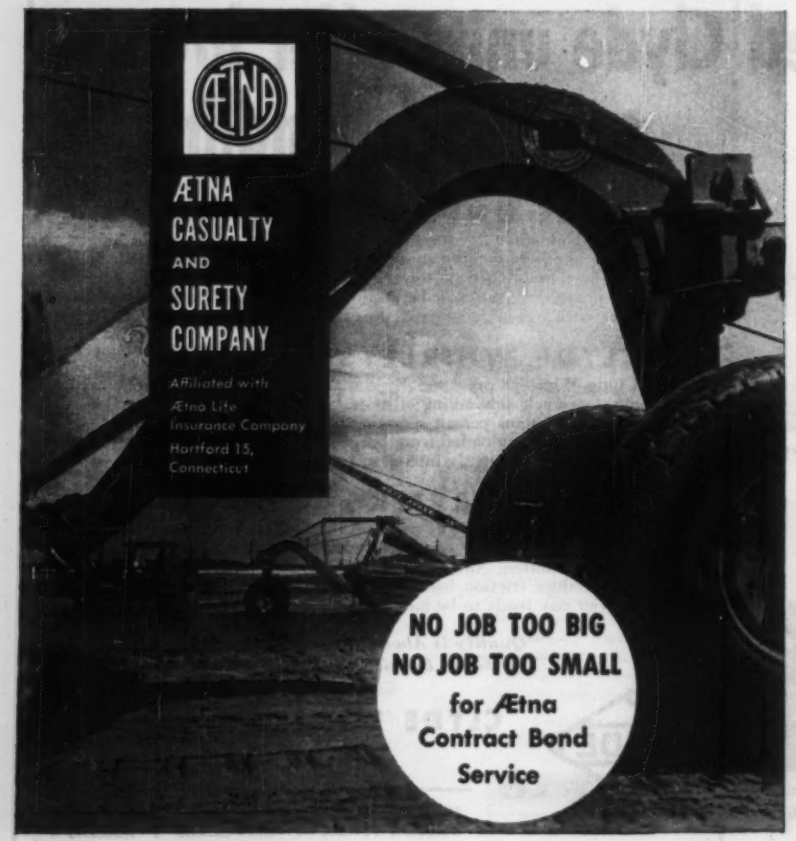
HTD No. 8 more than ⅓
ton per batch.

HTD No. 4-T
truck mount...
⅓ ton per batch.



HTD No. 5
¼ ton per batch.

McCONNAUGHAY MIXERS, INC.
LAFAYETTE, INDIANA
National distributors: Asphalt Equipment Co. 3314 Cherry Lane, Fort Wayne, Indiana



(Continued from page 110)

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, P. S. 305, Nostrand Ave. and Monroe St. **$2,500,000.**

▲ **N. Y., Brooklyn**—HOSPITAL, etc.—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Cumberland Hospital addns., imprvs., N. Portland Ave. and Auburn Pl., Proj. HO-230. **$7,182,500.** CD 9/9.

▲ **N. Y., Brooklyn**—LAUNDRY—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, laundry for city hospital, 567-97 Kingston Ave., Proj. Ho. 144, **$5,500,000.** CD 5/24/55.

N. Y., Jamaica—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, P. S. 48 addn., 108th Ave. and 155th St., Queens Boro. **$800,000.** CD 11/15/48.

▲ **N. Y., Levittown**—SCHOOLS—Bd. Educ., defeated referendum Dec. 6, addns. to 5 elementary schools and constr. 2 schools. **$6,086,690.** Kelly & Gruzen, 80 5th Ave., New York, N. Y., archts.-engrs. CD 11/21.

▲ **N. Y., Lewiston**—SCHOOL—Lewiston-Porter Bd. Educ., Creek Rd. Plans by Wm. C. Lurkey, 3901 Main, Buffalo, elementary school. **$1,250,000.** Proposal will be submitted to voters in February.

† **N. Y., Montrose** — ATTENDANTS' QUARTERS — Veterans Admin., Munitions Bldg., Wash., D. C., attendants' quarters, Veterans Hospital. **$877,000.**

▲ **N. Y., New York**—NURSES HOME—Dpt. P. Wks., Municipal Bldg., Zone 7, nurses home at Metropolitan Hospital, 99 E. 99th St., and Franklin D. Roosevelt Dr., Proj. HO-59A. **$3,870,191.** CD 7/23.

▲ **N. Y., New York**—AQUATIC BIRD HOUSE—Dpt. Parks, Arsenal Bldg., Zone 21, acquatic bird house at Bronx Zoo, New York Zoological Society Proj. **$825,000.** CD 6/5.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, P. S. 154, E. 138th St. and Brook Ave., Bronx Boro. **$2,500,000.**

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, addn., modernization P. S. 57, E. 115th St. and Third Ave., Manhattan Boro. **$1,600,000.**

▲† **N. Y., New York**—CUSTOMS COURT, etc.—General Services Admin., 18 and F Sts. N.W., Wash. 25, D. C., plans by Jacobs & Kahn, 2 Park Ave., Office of Alfred Easton Poor, 400 Park Ave., Eggers & Higgins, 787 United Nations Plaza, all of New York, N. Y. U. S. Customs Court and office bldg., Foley Sq., Worth and Duane Sts. **$68,062,000.** CD 11/26.

Pa., Annville—SCHOOL—Annville-Cleona Jt. School Dist., Annville, grade school addn. **$850,000.**

Pa., Biglerville—SCHOOL—Upper Adams Jt. School Dist., Biglerville, high school addns., alterations. **$900,000.**

▲ **Pa., Freeport**—SCHOOL—Freeport Area Jt. School Dist., plans by Walter Rittenhouse, Kittanning, Senior High School (Proj. 819-575). **$1,489,952.** Bids about July 15. CD 3/8/56.

▲ **Pa., Littlestown**—SCHOOL—Littlestown Jt. School Dist., high school bldg. **$1,852,500.**

▲ **Pa., Phila.**—SCIENCE—General State Auth., 18th and Herr Sts., Harrisburg and Temple University, Broad and Montgomery Aves. Plans by Nolen & Swinburne, 1601 Locust St., science and classroom bldg., GSA 1104. **$4,000,000.** Severud-Elstad-Krueger, 415 Lexington Ave., New York, N. Y., engrs. Bids in 2 weeks. CD 2/12.

▲ **Tex., Angleton**—SCHOOL—Angleton Ind. School Dist. plans by Duryea, Elkins & Greeson, 1917 Westheimer Rd., Houston, high school plant. **$1,250,000.** CD 12/23.

Tex., Austin—CHEMISTRY—Bd. Regents, University of Texas, Main Admin. Bldg., plans by Preston M. Geren, 1607 Fort Worth National Bldg., Fort Worth, 4 story, concrete frame, masonry, concrete block chemistry bldg. addn. **$923,000.** CD 8/5/57.

† **Va., Kecoughtan**—HOSPITAL—Veterans Admin., Munitions Bldg., Wash., D. C., hospital modernization, Phase III, administrative wing. **$918,200.**

▲ **Wash., Pullman**—DORMITORIES, etc.—Washington State College. Plans by Lea, Pearson & Richards, 240 S. Stadium Way, Tacoma, two 6 story men's dormitories, $2,500,000; plans by Walker, McGough & Trogdon, Great Northwest Life Ins. Bldg., Spokane, Wash., residence hall for 300 women, **$1,000,000.**

▲ **Wash., Seattle**—SCHOOL—School Dist. No. 1, 815 4 Ave. N. Plans by J. W. Maloney, Central Bldg., Zone 4, Junior-Senior High School, Henderson St. and Seward Park Ave., Rainier Beach Dist. **$3,300,000.** CD 11/20.

▲ **Wyo., Casper** — SCHOOLS, etc. — Natrona Co. High School Dist. and School Dist. No. 2, voted $1,500,000 bonds Dec. 2, science bldg., Casper College, and schools. CD 10/23.

Ont., Toronto—GARAGE—City, City Hall, garage for City Works Dpt., north area of city. **$800,000.**

▲ **Que., Westmount**—SCHOOL—Westmount Protestant School Comn., 10 Academy Rd., plans by deBelle & White, 5925 Monkland Ave., Montreal, high school, Westmount Athletic Grounds, St. Catherine St. W. **$2,500,000.**

COMMERCIAL BUILDINGS

▲ **Colo., Denver**—SCHOOL PLANT—United Air Lines, Stapleton Airfield, plans by Edwin A. Francis, 218 E. Speer Blvd., school plant consisting 2 bldgs., one 2½ story building and smaller bldg., swimming pool, tennis courts and parking lot for 115 cars, Montview

Blvd., E. 21, Quebec and Olive Sts. **$1,000,000.** CD 5/13.

▲ **Ill., Belvidere**—HOSPITAL—St. Joseph Hospital, Belvidere. Plans by F. O. Wolfenberger & Assocs., 501 Houston St., Manhattan, Kan., brick, concrete, etc. hospital, **$2,400,000.** Bids about March or April.

▲ **Ill., Chicago**—APARTMENT—Morris R. DeWoskin, c/o Executive House, 71 E. Wacker Dr., multi-story apartment, north bank of Chicago River, between State and Dearborn Sts. **$2,000,000.**

Ill., Glenview—SHOPPING CENTER—Milwaukee—Golf Development Corp., 236 N. Clark St., Chicago, plans by Walter W. Dechervie, 180 W. Washington St., Chicago, Golf Mill Shopping Center, incl. 75 unit, parking area, bounded by Gold Rd., Milwaukee Ave., Greenwood Rd. and Church St. **$14,000,000.**

▲ **Ill., Harwood Heights**—BOWLING CENTER—Holiday Bowl Corp., c/o L. E. Aronson, 100 W. Monroe St., 64 lane bowling center, incl. club rooms, rest rooms, nursery, Harlem Ave. and Lawrence St. **$4,000,000.** Constr. early 1959.

▲ **Ill., Melrose Park**—BOWLING ALLEY—Mages Sports Arenas, Inc., sub. Mages Sporting Goods Co., 277 W. Madison St., Chicago, plans by Barancik, Conte & Assocs., N. Michigan Ave., Chicago, bowling alley, **$1,000,000.**

▲ **Ill., River Grove**—BOWLING ALLEY—Mages Sports Arenas, Inc., sub. Mages Sporting Goods Co., 227 W. Madison St., Chicago, plans by Barancik, Conte & Assocs., 332 N. Michigan Ave., Chicago, bowling alley, River Rd. and Belmont Ave. **$1,000,000.**

▲ **Ind., Indianapolis**—MOTEL—Lippman & Assoc., 3939 Meadows Dr., 2 story L shaped motel. **$1,500,000.**

▲ **Ind., Indianapolis**—BANK AND OFFICE—Merchants National Bank & Trust Co., 11 S. Meridian St., multi-story bank and office bldg., Washington and Virginia. **$1,000,000.** Constr. in 1959.

▲ **Ky., Louisville**—BANK—Liberty National Bank & Trust Co., 2nd and Market Sts., Zone 2, plans by Walter Wagner and Jas. H. Potts, Fincastle Bldg. 3rd and Broadway, Zone 2, 6 story bank bldg., 406-416 W. Jefferson St. and 6 story glass facade extending from Liberty St. to Jefferson St. **$2,500,000.** Bank Building & Equip. Corp., 1130 Hampton, St. Louis, Mo., consult. engrs. CD 1/23.

▲ **La., New Orleans**—SHOPPING CENTER—Shelby Constr. Co., Inc., 136 S. Derbigny St. Plans by Colvert, Lowery & Assn., 809 Chartress St., 450,000 sq. ft. steel frame, rein.-con., concrete block and brick Lakeside shopping center, Veterans Hy. and Causeway Blvd. **$1,000,000.**

▲ **Mass., Natick**—DEPARTMENT STORE, etc.—Owner, c/o Tekton Assoc., Inc., archt., 229 W. Central St., 5 story, 28,000 sq. ft. department store and 100,000 sq. ft. office bldg., incl. parking for 150 cars, Walnut and Main Sts. **$3,000,000.** Constr. 1959.

▲ **Mass., Worcester**—SHOPPING CENTER, etc.—Borman Realty Corp., c/o Domain & Salk, archts., 340 Main St., Country Club Development, incl. shopping center, apartment and residential sections on 105 acres, Lincoln St. **$3,000,000.** Constr. 1959.

▲ **Minn., Minneapolis**—APARTMENT—Community Development, Inc., 9th-Chester Bldg., Cleveland, O., 209 co-operative apartment units, Olson Hy. between Emerson and Humboldt Aves. North. **$2,250,000.** Constr. 1959.

▲ **Minn., St. Peter**—SCIENCE—Gustavus Adolphus College, plans by Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, 2 story Nobel Hall of Science. **$1,000,000.** Constr. 1960.

▲ **Mo., Raytown**—MOTEL, etc.—Owner, c/o Leo E. Aronson, 1 N. LaSalle St., Chicago, Ill., plans by Kivett, Myers & McCallum, 1016 Baltimore, Kansas City, Mo., and Sidney Y. Morris & Assocs., 134 N. LaSalle, Chicago, Ill. 2 story, 100 unit contemporary style motel, incl. 60'x100 ft. swimming pool, restaurant, parking for 100 cars. **$2,000,000.**

▲ **N. H., Nashua**—SHOPPING CENTER, etc.—R. C. Corp., c/o Clyde Everett Equipment Co., Cambridge St., Burlington, Mass., preliminary survey and plans by Charles H. Lench, Jr., Duxbury, 30 acres shopping center and residential development, former J. D. Gardiner Estates, Rte. 3. **$1,000,000.** CD 9/23.

▲ **N. J., New Vernon**—HOUSES—Old Army Road Corp., c/o Country Properties, Rte. 202, Bernardsville, 70 houses, on 233 acre tract off Rt. 202. **$3,000,000.**

▲ **N. Y., Buffalo**—HOUSING DEVELOPMENT—Howard Builders, 3143 Walden Ave., Depew, N. Y., 110 single family housing development, French Rd. and Geo. Urban Blvd. **$2,000,000.** Constr. early spring.

▲ **N. Y., Hamburg** — SHOPPING CENTER — Wanakah Plaza, Inc., Mr. Roxie Gian, c/o Stanley Podd, archt., Tupper and Delaware Ave., Buffalo, 125,000 sq. ft. shopping center, incl. 30,000 sq. ft. supermarket plus 30 other stores. **$10,000,000.** CD 1/30/56.

N. Y., Jackson Heights — APARTMENT, etc. — Harris Realty Co., 9427 37th Ave., plans by B. C. Gallo, 409 Chelsea St., East Boston, Mass., 4 story, masonry apartment and store bldg., 37th Ave. and 95th St. **$800,000.** Constr. 1959.

▲ **N. Y., New York**—DORMITORY, etc.—New York University, 100 Washington Square, Zone 12. Plans by Marcel Breuer & Assocs., 201 E. 57 St., men's and women's dormitory, **$3,100,000;** dining hall, **$1,000,000,** on University Heights Campus.

▲ **N. Y., Tarrytown**—INN—Hilton Hotels Corp., 401 Seventh Ave., New York, Zone 1, 200 room Inn on 10 acre tract on Broadway and Thruway, Exit No. 9. **$2,000,000.**

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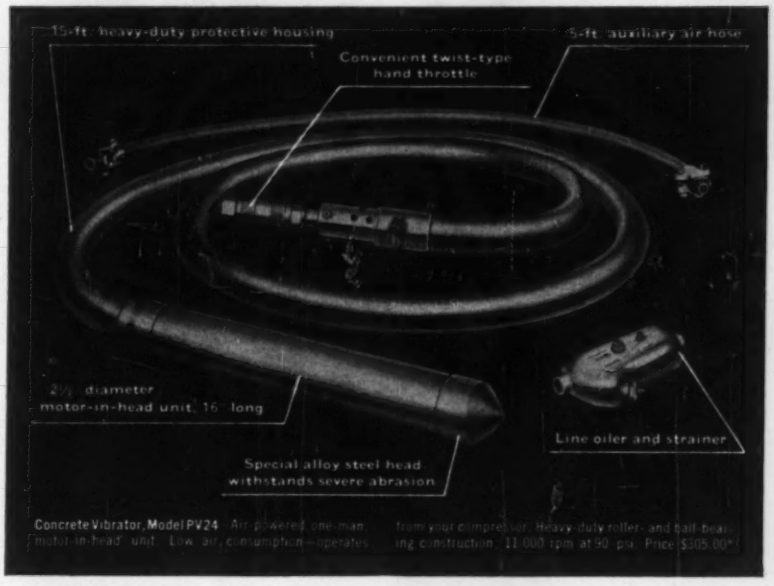
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Special alloy steel head withstands severe abrasion

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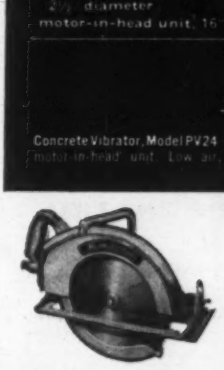

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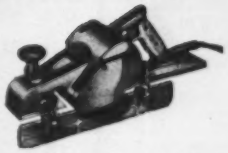
Generator Set, Model 3WAS—3,000 watts capacity, 25 amp. AC at 115 v.; 60-cycle; four take-off plugs. Reliable Wisconsin 8-hp engine. **Price $525.00***



Planer, Model 3P—Knob depth adjustment can be changed while cutting. Fast, easy to operate; 8.4-amp. 115-v., AC/DC motor; weight: 15 lbs. **Price $178.00***

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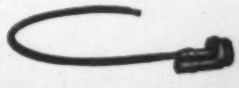

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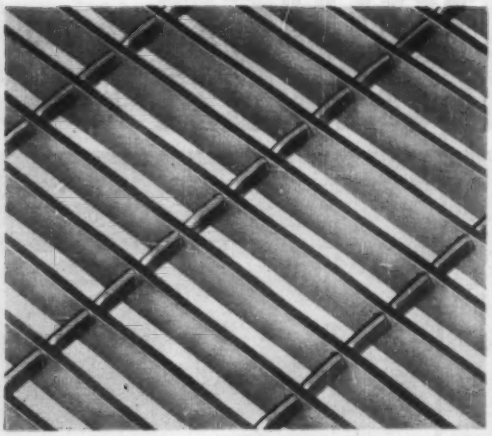

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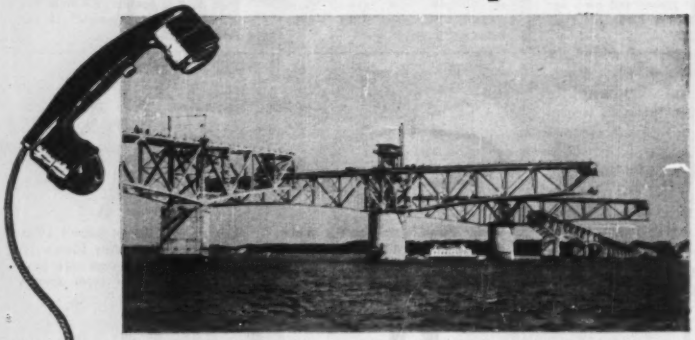

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▲ **O., Chagrin Falls**—APARTMENTS—Arthur Mills & Assocs., 2555 Kemper Rd., Cleveland, Zone 20. Plans by Arthur M. Hemlock, 10010 Euclid Ave., Cleveland, Zone 6, ten garden-type 8 suite apartments, Solon Rd. $1,000,000.

▲ **O., Middletown**—DEPARTMENT STORE—Manuel D. Mayerson Realty Co., Provident Bldg., Cincinnati, McAlpins Department Store addn. to Middletown Shopping Center. $1,500,000. Constr. in 1959.

▲ **Ore., Portland**—HOSPITAL—Physicians & Surgeons Hospital, 1927 NW Lovejoy St., plans by Roald, Schmeer & Harrington, Portland Trust Bldg., hospital addn. $2,000,000. Bids in March.

▲ **Ore., Portland**—APARTMENT—Terwilliger Plaza, Inc., 1530 W.W. Taylor St., plans by Dougan, Heims & Thompson, Royal Bldg., 338-unit retirement apartment. $3,833,440.

▲ **Pa., Fort Washington**—SCHOOL BLDGS.—Germantown Academy, Schoolslane and Green St., Phila., school bldgs., New site. $3,000,000. CD 4/22, under Pa., Germantown.

Tenn., Knoxville—MOTEL—Jean Monday Realty Co., 311 W. Vine Ave., 106 unit motel. $850,000. Wallace E. Johnson, lessee (president Holiday Inns).

▲ **Tex., Houston**—SHOPPING CENTER, etc.—L. Bernard Kerce, 1945 W. Gray St., shopping center, $2,500,000; hard paved area and auto center, $80,000; site earthwork and drainage, $50,000, Berry Rd. and Eastex Freeway.

▲ **Tex., Houston**—SHOPPING CENTER—Frank W. Sharp Constr. Co., 1120 W. 43 St., shopping center, Jensen Dr., $1,000,000.

▲ **Alta., Edmonton**—SHOPPING CENTER—Kensington Shopping Center Ltd., c/o Gordon & Mangold, archts., 10123 112th St., 85,000 sq. ft. shopping center, 7½ acre northwest region of city. $2,000,000.

Ont., Ottawa—BIOLOGY—University of Ottawa, Laurier Ave. E., plans by Jean Serge Lefort, 86 Greenfield Ave. 3½ story, bsmnt., 95 x 137 ft. steel, cement block, limestone Biology bldg. $800,000. CD 12/9.

▲ **Ont., Ottawa**—LAW—SOCIAL SERVICES—AUDITORIUM—University of Ottawa, Laurier Ave. E. Plans by Jean Serge Lefort, 86 Greenfield Ave., 4 story, bsmnt., 50 x 245 ft. steel, cement block, limestone combined law, social services and auditorium bldg. concrete fdns. $1,000,000. CD 4/5/56.

▲ **Ont., Peterborough**—HOTEL—Empress Hotel, 131 Charlotte St., Cyril Fuller, prop., plans by John Venters, Empress Hotel, 131 Charlotte St., 6 story, 100 rooms hotel reconstr. $1,000,000. CD 5/7.

▲ **Ont., Port Arthur**—HOMES—Boyd & Sohlman Ltd., 218 Ray Blvd., 225 homes, Forest Park Development incl. water, sewer mains, paved streets and curbs, etc. $3,000,000.

▲ **Que., Montreal**—APARTMENTS—Island Constr. Co. Ltd., c/o Thibodeau & Thibodeau, archts., 940 Cote de Liesse Rd., two 3 story, bsmnt., 65 x 160 ft. rein.-con. frame, stone, 70-unit apartment blocks, Marlboro Dr. $1,000,000.

▲ **Que., Montreal**—SCIENCE—Loyola College, 7174 Sherbrooke St. W., plans by Franco Consiglio, 1201 Guy St., science bldg. $2,000,000.

▲ **Que., Montreal**—APARTMENT—Owner, c/o Ben-Ami Shulman, archt., 5174 Cote des Neiges Rd., 6 story, bsmnt., rein.-con. brick, stone, 104 suite apartment block, Fielding, Mayfair and Coronation Aves., $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Calif., Saugus**—WIND TUNNEL—Lockheed Aircraft Corp., Calif. Div., 2627 N. Hollywood Blvd., Burbank, supersonic wind tunnel and high altitude environmental test facilities, 1st section, Lockheed Research Center. $5,000,000.

▲ **Fla., Port Everglades**—PLANT—Florida Power & Light Co., Ingraham Bldg., 25 SE 2 Ave., Miami, power plant addn. $50,000,000.

▲ **Ky., Louisville**—ROLLING MILLS, etc.—Cochran Foil Corp. (subsidiary of Anaconda Co.) 1430 S. 13th St., 2 rolling mills and plant addn. $2,000,000.

▲ **Minn., Roseville (P.O. St. Paul)**—TERMINAL—Glendenning Motorways, Inc., 820 Hampden Ave., terminal bldg. on tract west of Fairview Ave. and north of County Road C. $1,250,000.

▲ **N. C., Enka**—MILL—American Enka Corp., 530 5th Ave., New York, N. Y., 6 story nylon mill. $7,500,000.

Tenn., La Follette—SAW MILL—Koppers Co., Inc., Koppers Bldg., Pittsburgh, Pa. saw mill, 50,000 acres. $500,000.

▲ **Tex., Brownsville**—PLANT—Union Carbide Corp., 30 E. 42 St., New York, N. Y., plant addns. $2,000,000.

▲ **Wis., Two Rivers**—FACTORY, etc.—Hamilton Mfg. Co., 1316 18 St., 3 story, 150 x 150 ft. factory addn., 1 story, 66 x 141 ft. office addn. $1,000,000.

UNCLASSIFIED

▲ **Conn., Westport**—MARINA—Town, marina, $1,000,000.

▲ **Kentucky**—PIPELINE—Ashland Oil & Refining, 4510 Algonquin, Louisville, 75 mi. oil pipe line from Green Co. to Louisville. $2,000,000.

Missouri—TELEPHONE LINES—Triangle Telephone Co., Dix, telephone sys. extens. imprvs., incl. 508 mi. new lines, 5 mi. rebuilding in Maries, Miller, Phelps and Pulaski Counties, Proj. Missouri 883A. $800,000. Fred Finley, Lamar, Mo., consult. engr. CD 12/5.

▲ **Texas**—GAS GATHERING LINES—Transcontinental Gas Pipeline Corp., 3100 Travis St., Houston, 34 mi. 20 in. and 24 in. gas gathering lines, Robstown area. $1,020,000. CD 1/12/50.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 30 Massachusetts Dec. 31 New Hampshire
January 5 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲ **MAINE**—State Hy. Comn., State Office Bldg., Augusta, **H. E. Sargent, Inc.**, Stillwater, Me., CA **$1,628,591** (3 bidders), grading, drainage, grav. base 5.393 mi. City of Augusta and Town of Sidney, FAP No. I-95-6(6)105, Kennebec Co. Bids Dec. 10. CD 11/25.

NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord, Bids opened 12/4,

Arthur Whitcomb Constr. Co., 725 Main St., Keene, N. H., LB **$654,808** (4 bidders) hot b. conc. 4.09 mi. and 2 rein.-con. box culverts, U. S. 202, Peterboro, Hancock and Bennington, Hillsboro Co. CD 11/26.

▲ **VERMONT**—State Hy. Dpt., State House, Montpelier, **Olson Constr. Co.**, 56 Northfield St., Montpelier, Vt., CA **$1,055,727**, est. approx. $1,100,000, hy. and bridge, U. S. Rte. 2, Milton and South Hero, F-028-1 (1). Bids Dec. 5. CD 12/9, under LB.

VERMONT—State Dpt. Hys., State House, Montpelier, **S. V. Rossi Constr. Co., Inc.**, 49 McDermott Ave., Torrington, Conn., LB **$432,033**, est. $400,000, hy. and 2 bridges, Vt. U. S. Rte. 7, Manchester, Dorset, F-019-2 (5). CD 12/1.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 12/16, **Campanella & Cardi Constr. Co.**, 780 Jefferson Blvd., Warwick, R. I. LB **$2,387,882**, est. $3,051,892 constr. section Western Expressway, incl. 4 bridges FA Proj. U-3601 (1), Fall River. CD 12/2.

† **Davison Constr. Co., Inc.**, 1306A Elm St., Manchester, N. H., LB **$812,000**, est. $974,800, constr. Airmen's Service Club and Electronics Shop, Westover Air Force Base, ENG-19-016-59-54, CHICOPEE FALLS, MASS. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Dec. 11. CD 12/1.

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford, Bids opened 12/15,

Savin Brothers, Inc., Cottage Grove Rd., Bloomfield, Conn., LB **$3,871,720**, grading, drainage, concrete paving relocation Route 8, incl. ramps, side roads and temporary connections to existing road at Thomaston Dam Proj., Proj. 140-108, Litchfield and Thomaston. CD 11/26.

BUILDINGS—LB & CA

▲ **J. R. Cianchette & Sons**, South Main St., Bangor, Me., Separate Contracts, **$2,000,000**, SHOPPING CENTER, Hammond St., PITTSFIELD, ME. Henneberg & Henneberg, 42 Mt. Auburn St., Cambridge, Mass., archts. CD 12/17.

▲ **Aberthaw Constr. Co.**, 60 State St., Boston, Mass. CA Est. **$1,000,000**, SHOPPING CENTER, Jct. Rte. 128 and Southeast Expressway, BRAINTREE, MASS. Federated Stores, Inc., and William Filene's Sons Co., 426 Washington St., Boston, Mass. Cabot, Cabot & Forbes, 60 State St., Boston, Mass., engrs. CD 11/17.

E. J. Rose & Son, Inc., 35 Trefton Dr., Braintree, Mass., CA Est. **$360,000**, BANK and OFFICE, Elm and Washington Sts., DEDHAM, MASS. Norfolk County Trust Co., 1319 Beacon St., Brookline, Mass. Bids Aug. 20. CD 8/15.

▲ **Stone & Webster Engineering Corp.**, 49 Federal St., Boston, Mass., CA **$20,000,000** (1st unit) design and construct 600,000 KW GENERATING PLANT, Brayton Point, South Somerset, SOMERSET, MASS. Montaup Electric Co., Riverside Ave., Somerset, Mass. CD 12/18.

▲ **Green Manor Estates, Inc.**, 681 Parker St., Manchester, Conn., Owner Builds, **$1,391,180**, 82 HOUSES, "Green Manorville" Taylor Rd., Scitico, Second Section, ENFIELD, CONN. CD 12/4.

Montauk Park, Inc., Lake St., Vernon, Conn., Owner Builds, **$584,000**, 40 HOUSES, "Montauk Park" Lake St., VERNON, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 30 Maryland

STREETS AND ROADS

December 30 Maryland

BUILDINGS—BA

▲ **Md., Rockville**—SCHOOL—BA 1/8—Montgomery Co. Bd. Educ., Rockville, Gaithersburg Junior High School, Gaithersburg, $1,250,000. Plans deposit $35. Frank Duane, 1726 M St. N.W., Wash., D. C., archt. CD 5/7.

▲ **Pa., Montrose**—SCHOOL—BA 1/20—Pa. Pub. School Bldg. Auth., 101 S. 25th St., Harrisburg, high school bldg. for Montrose Consolidated Jt. School Dist. $1,600,000. Plans deposit $50. Wolf & Hahn, 459 Hamilton St., Allentown, archts. CD 12/2/57.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**Collins Bros., Inc.**, 12 Talmadge Pl., Mechanicville, N. Y., CA **$518,431**, reconstr. 2.75 mi. Rte. 157A near Thompson's Lake, Albany Co.;

N. Y.—**John Bros. Constr. Co., Inc.**, 37 Hall St., Binghamton, N. Y., CA **$1,156,511**, grading, drainage and structural work in preparation for future paving 1.89 mi. four-lane divided section Empire Stateway and 0.68 mi. access roads from Trim St. in vicinity of Corbettsville near Binghamton to Sunset Dr., Broome Co.;

N. Y.—**Rocell Constr. Co., Inc.**, 430 Van Voorhis Ave., Rochester, N. Y., CA **$782,496**, constr. 1.49 mi. section Central Ave. Arterial Rte. 98 in Salmanca, incl. new span over Great Valley Creek, Cattaraugus Co.;

N. Y.—**Lizza & Sons, Inc.**, 152 South St., Oyster Bay, N. Y., CA **$536,123**, drainage and misc. work at four locations along Jericho Turnpike (Rte. 25) in vicinity of Huntington Station, Coram, Middle Island and Jamesport, 2.41 mi. Suffolk Co. Grand total $2,993,-562. Bids Oct. 30. CD 10/31, under LB.

▲ **NEW YORK**—Dpt. P. Wks., State Office Bldg., Albany,

Tully & DiNapoli, Inc. & Slattery Contg. Co., Inc., 127-50 Northern Blvd., Flushing, N. Y., CA **$8,398,372**, grading, drainage work for future paving Throgs Neck Expressway between Layton Ave. and Blair Ave. and Cross Bronx Expressway extension from Lafayette and East 177th St. to Blair Ave., 2.73 mi., Bronx Co. Bids Nov. 20. CD 11/21, under LB.

▲ **Nager Elec. Co., Inc.**, 426 Broadway, Brooklyn 11, N. Y., CA **$2,086,000**, modernization facilities, electrical distr. sys., Phase I and II, Watervliet Arsenal, ENG-30-075-59-9, WATERVLIET, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Nov. 12. CD 11/14, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., Kenneth D. Rice, secy., 1035 Parkway Ave., Trenton, Bids opened 12/16,

I. B. Miller Contg. Co., 18-12 45 St., Long Island City, N. Y., LB **$1,585,195** (15 bidders), constr. 2 Interstate Rte. 78 bridges, Bloomsbury, Hunterdon Co. CD 12/1.

† **American Dredging Co.**, 12 S. 12th St., Phila., Pa. CA **$509,432**. dredging Schuylkill River, between mouth of Schuylkill River and Passayunk Ave. Bridge, ENG-36-109-59-27, PENNSYLVANIA. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Nov. 20. CD 11/26, under LB.

▲ **John Matricciani, Inc.**, 408 S. Caroline St., Baltimore 31, Md., CA **$1,258,370**, imprv. Druid Lake Reservoir-Druid Hill Park, BALTIMORE, MD. City, Bureau Water Supply, 505 Municipal Bldg., Baltimore 2, Md. Bids Nov. 26. CD 12/2, under LB.

BUILDINGS—LB & CA

† **Fischer Malik, Inc.**, 11 Moffitt Blvd., Bay Shore, N. Y., CA **$598,000**, MEMORIAL CHAPEL at U. S. Merchant Marine Academy, IFB B1-MA 59, KINGS POINT, N. Y. Div. Purchase & Sales, Maritime Admin., Wash., D. C. Bids Nov. 25. CD 12/2, under LB.

▲ **Braverman Constr. Co.**, 16 Court, Brooklyn, N. Y., CA **$692,380**, general constr. POWER HOUSE (Bldg. 11) for Bronx State Hospital for Dpt. Mental Hygiene, NEW YORK, N. Y. State Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Nov. 26. CD 12/3, under LB

Paisler Corp., 129 Amsterdam Ave., New York, N. Y. CA **$758,000**, heating for Power House (Bldg. 11) (New York, N. Y.).

Glenwall Constr. Co., Roselle Park, N. J., CA **$823,890**, JUNIOR HIGH SCHOOL, Colonia section of Twp., WOODBRIDGE, N. J. Bd. Educ. of Woodbridge Twp., Woodbridge, N. J. CD 11/21, under LB.

Frank H. Wilson Co., 125 Coulter Ave., Ardmore, Pa., CA **$796,980**, HIGH SCHOOL addns., BRISTOL, PA. Bristol Borough School Bd., Buckley St., Bristol, Pa. Bids Dec. 2, awarded Dec. 12. CD 12/10, under LB.

▲ **Spera Constr. Co.**, 1625 N. Front St., Harrisburg, Pa. CA **$1,100,000**. SHOPPING CENTER, 32nd St., CAMP HILL, PA. Morris A. Kravitz, Inc., 225 S. 15 St., Phila., Pa. Bids Dec. 3. CD 11/26.

▲ **F. K. Campion**, P. O. Box 23, 1101 Bethlehem Pike, Flourtown, Pa., CA **$2,164,000**, general constr. SENIOR HIGH SCHOOL, POTTSTOWN, PA. Pottstown Pa. School Dist., Pottstown, Pa. Bids Nov. 19. CD 11/26, under LB.

R. S. Mowery & Sons, Inc., 527 Mooreland Ave., Box 367, Carlisle, Pa. CA **$562,464**, general constr. 2 ELEMENTARY SCHOOL BLDGS. (Burd Bldg. east end, Proj. 667-639) (Grayson Bldg. west end, Proj. 668-640) for Shippensburg Area Jt. School Dist., SHIPPENSBURG PA. Pa. Pub. School Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. Bids Nov. 18, awarded Dec. 9. CD 11/25, under LB.

John H. Wickersham, P. O. Box 1216, Lancaster, Pa. CA **$898,000**, 1 and 2 story, brick, steel, concrete Perryville JUNIOR SENIOR HIGH SCHOOL addn., ELKTON, MD. Bd. Educ. Cecil Co., Elkton, Md. Bids Oct. 28. CD 11/6, under LB.

† **McCloskey & Co.**, 1620 Thompson St., Phila., Pa. LB **$741,000** substructure CAPITOL BLDG. East Front addn. and relocation utilities, WASH., D. C. Office of Architect of the Capitol, Wash., D. C. Roscoe De Witt, 2025 Cedar Sprlsg, Dallas, Tex., archt. Alfred Easton Poor, 400 Park Ave., New York, N. Y., and Jessee M. Shelton, 96 Poplar St. N.W., Wash., D. C., assoc. archts. CD 10/26/48.

▲ **J. Roland Dashiell & Sons**, 647 S. Salisbury Blvd., Salisbury, Md., LB **$1,411,153** (7 bidders) constr. BOARD of HEALTH BLDG., incl. 3½ story bldg. to house offices, laboratories and clinics, near Old State House, DOVER, DEL. State Bd. Health, Watson Memorial Blvd., Dover, Del. Bids Dec. 16. CD 11/16.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 30 Alabama

STREETS AND ROADS

December 30 Alabama, West Virginia

BUILDINGS—BA

N. C., Raleigh—PHYSICAL EDUCATION—BA 1/22—North Carolina State College, Raleigh, physical educ. bldg Plans deposit $100 general constr., $50 others. McMinn, Norfleet & Wicker, 2828 Lawndale Dr., Greensboro, archts.

BUILDINGS—SLC

Ky., Kosmosdale—PLANT—Kosmos Portland Cement Co., Starks Bldg., Louisville, Zone 2, soon lets contract, steel skeleton, concrete slab, corrugated metal siding expansion to Portland Cement Plant. Over $700,000. Johnson & Johnson, Engineers-Archts., Inc., 111 W. Washington, Chicago, Ill., engr.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH CAROLINA**—State Hy. Dpt., Hotel Jefferson, Columbia,

Diamond Constr. Co., Ocean Steamship Terminal, Savannah, Ga. CA **$2,111,517**, constr. 1,633 ft. 8 in. rein.-con. prestressed concrete, structural steel and treated timber bridge over Ashley River (North bound lane) U. S. Rte 17, west of Charleston, S. C. Docket No. 10.442, F.A. Pro. U-215 (3), Charleston Co. Bids Nov. 18. CD 11/25, under LB.

▲ **Blount Bros. Constr. Co.**, 79 Commerce, Montgomery, Ala. CA **$9,996,689**, airport terminal bldg., ATLANTA, GA. City, City Hall, Atlanta, Ga. Bids Dec. 9. CD 12/11, under LB.

Atlanta International Raceway, Mortgage, Guarantee Bldg., Atlanta, Ga., rejected bids Nov. 10, grading paving AUTO RACE TRACK, HAMPTON, GA. LB **$487,225**. CD 11/21, under LB.

FLORIDA—State Rd. Dpt., Tallahassee,

H. E. Wolfe Constr. Co., Box 1361, St. Augustine, Fla., CA **$999,556**, 4-lane 8½ in. limerock base with Type I b. con. surf. course and binder course, drainage structures, one dual concrete slab deck bridge (each 100 ft. long) one dual concrete slab deck overpass (each 225 ft. long over S.A.L. R.R.) with prestressed concrete beams on prestressed piling etc. 3.002 mi. SR 200, Fed. Aid Proj. Nos. S-21 (1) and SG-21 (2). Jobs Nos. 26060-3109, 26060-3501 and 36040-3501, Marion and Alachua Counties. Bids Oct. 28, awarded Dec. 9. CD 10/31, under LB.

▲† **R. E. Clarson, Inc.**, 1930 13 Ave. N., St. Petersburg, Fla., CA **$2,062,153**, Complex 30 and Nose Installation Bldg. for Complex 30 at Cape Canaveral Missile Test Annex, incl. air-conditioned rein.-con. blockhouse and nose installation bldg., 2 revetments, 2 rein.-con. launching pads, 2 guardhouses and 2 electric substations, grading, paving and outside utilities, Patrick Air Force Base, COCOA, FLA. U. S. Eng., Box 4970, Jacksonville, Fla. CD 4/23.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort,

Ralph Myers Constr. Co., P. O. Box 230, Salem, Ind., CA **$2,436,312**, grade, drain 4.679 mi., incl. 2 structures Covington-Lexington Interstate 75, I 75-7(3), Grant Co. Bids Dec. 5. CD 12/10, under LB.

BUILDINGS—LB & CA

▲ **Rea Constr. Co.**, Pineville Rd., Charlotte, N. C. CA **$1,558,775**, Central Y.M.C.A., CHARLOTTE, N. C. Young Men's Christian Assn., 330 S. Tryon St., Charlotte, N. C. Bids Dec. 4. CD 11/18.

City Council & Bd. Comrs. Guilford Co., High Point, N. C., rejected bids Nov. 12, CITY-COUNTY OFFICE BLDG., HIGH POINT, N. C. LB **$662,409**, May readvertise next year. CD 11/19, under LB.

▲ **ORD Enterprises, Inc.**, Courtesy Rd., High Point, N. C. Separate Contracts. **$1,500,000** SHOPPING CENTER, GREENSBORO, N. C. George Connor, Jr., 233 Professional Bldg., High Point, N. C., archt.

Aiken Federal Savings & Loan Assn., Aiken, S. C., rejected bids BANK-OFFICE, AIKEN, S. C. LB **$518,460**. CD 11/3, under LB.

Chas. J. Craig Constr. Co., 1610 Westminster Dr., Columbia, S. C. LB **$414,858** 63,000 sq. ft. EQUIPMENT, SALES and SERVICE BLDG., COLUMBIA, S. C. Jeff Hunt Machinery Co., 1220 Huger St., Columbia, S. C. Bids Dec. 9. CD 11/20.

J. J. Black & Co., 575 Plum St., N. W. Atlanta, Ga., CA **$718,926**, Southwest HIGH SCHOOL, ATLANTA GA. City Bd. Educ., 13 Floor, City Hall, Atlanta, Ga. Bids Dec. 2, awarded Dec. 8, CD 12/12, under LB.

▲ **Stone & Webster Engineering Corp.**, 49 Federal, Boston, Mass. CA **$2,500,000**, design and construct. 46,000 KW ELECTRIC POWER PLANT, Unit 2, at Port Wentworth Station, SAVANNAH, GA. Savannah Electric & Power Co., 27 W. Bay St., Savannah, Ga.

Apgar & Markham Constr. Co., 3216 Grand Ave., Miami, Fla. LB **$773,000** air conditioning, alterations, elevator, remodeling COURTHOUSE, Dade Co., MIAMI, FLA. Bd. Comrs. Dade Co., 10 Floor, Courthouse, Miami, Fla. Bids Dec. 9, CD 11/21.

Settecasi & Chillura, 2101 5 Ave., Tampa, Fla., CA **$869,000** Robinson HIGH SCHOOL, TAMPA, FLA. Hillsborough Co. Bd. P. Instruction, Courthouse, Tampa, Fla. Bids Nov. 25. CD 12/9, under LB.

Jehl Bros. Inc., P. O. Box 7128, Montgomery, Ala., CA $696,000 DEPARTMENT STORE, HUNTSVILLE, ALA. Montgomery Ward & Co., Inc., 619 W. Chicago, Chicago, Ill. Bids Nov. 25, CD 11/21.

J. C. McClendon, 2126-22 Ave., Gulfport, Miss., CA $994,000, STUDENT HOUSING, Mississippi Southern College, HATTIESBURG, MISS. State Bldg. Comn., Woolfolk State Office Bldg., Jackson, Miss. Bids Dec. 12. CD 11/21.

W. C. Salley, Box 24, Monroe, La., LB $610,600, 1 story, brick Morgantown SCHOOL, NATCHEZ, MISS. Bd. Trustees Natchez Separate School Dist., Natchez, Miss. L. L. Brasfield, 930-23 Ave., Meridian, Miss., archt. Bids Dec. 4. CD 12/11.

Barnet Brezner, Box 1030, Alexandria, La., LB $593,700 (6 bidders), Emanuel Baptist CHURCH, alterations, addns., ALEXANDRIA, LA. Emmanuel Baptist Church, 430 Jackson St., Alexandria, La. Bids Dec. 10. CD 12/10.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† O., Dayton—READINESS CREW BLDG.—BA 1/22—U. S. Eng., Box 59, Louisville, Ky., 2 story, rein.-con., Readiness Crew bldg. Wright Patterson Air Force Base, ENG-15-029-59-33. Over $500,000. CD 9/5.

BUILDINGS—BA

Ind., Fort Wayne—SCHOOL—BA 1/13—Fort Wayne Community Schools, 1230 S. Clinton St., Lakeside Junior High School, 2100 Lake Ave. $900,000, Plans deposit $25, Martindale & Dahlgren, 2131 Fairfield Ave., archts. CD 6/22/55.

HEAVY CONSTRUCTION—LB & CA

▲ Sanitary Dist. of Hammond, 5143 Columbia Ave., Hammond, Ind., received no bids Nov. 20, sewage treatment plant addn., HAMMOND, IND. $1,200,000. Carl B. Carpenter, 7501 Indianapolis Blvd., Hammond, Ind., engr. Will re-advertise for bids in about 3 months. CD 11/6.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield,

General Paving Co., 30 E. John St., Champaign, Ill., CA $695,274, paving 1.53 mi. from south of Lake Decatur bridge south, Macon Co. CD 11/28, under LB.

▲ Consolidated Constr. Co., 101 S. Wells St., Chicago, Ill., LB $1,293,822 (10 bidders), Kostner Ave. Auxiliary Outlet Storm Sewerage Sys., 30- to 90-in. rein.-con. pipe, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Dec. 10. CD 11/25.

▲ Michael Pontarelli, Inc., 4248 N. Kilpatrick Ave., Chicago, Ill., CA $1,551,001, auxiliary outlet sewer sys. Pratt Ave., Cont. 2-B SA 134-0708.1-CS, CHICAGO, ILL. City of Chicago, City Hall, Chicago, Ill. CD 10/13, under LB

▲ Robert A. Black, Inc., 13912 S. Halsted St., Riverdale, Ill., CA $1,168,831, bit. paving 1½ mi. Northwest Expressway, Canfield Rd. to Ill. Toll Hy., Park Ridge, CHICAGO, ILL. Comrs. Cook Co., County Bldg., Chicago 2, Ill. CD 12/3, under LB.

▲ WISCONSIN—State Hy. Comn., State Office Bldg., Madison,

Wis.—Mann Bros. Sand & Gravel, Inc., Lincoln and Third Sts., Elkhorn, Wis. CA $134,964, base and single aggregate bit. surf. 2.577 mi. C.T.H. E S.T.H. 15 Road, C.T.H. J, Contr. 1, Proj. S 0466 (1), Walworth Co., Bids Dec. 9;

Wis.—Fox Valley Constr. Co., 221 W. College Ave., Appleton, Wis., CA $657,877, concrete paving 5.46 mi. U.S.H. 14-Illinois State Line (Eastern Ave.-Turtle Creek Sect.) Road, IH 90, Contr. 1, Proj. I-903 (19) 176, Rock Co.;

Wis.—Koch Constr. Co., 239 W. Center St., Milwaukee 12, Wis., CA $699,687, concrete paving 3.725 mi. Hudson-Eau Claire (Menomonie-Elk Creek Sect.) Road, IH 94, Contr. 2, Proj. I-94-1 (31) 41, Dunn Co.;

Wis.—Woodrich Constr. Co., 201 18 Ave. S., Hopkins, Minn., CA $784,744, concrete paving 5.794 mi. Hudson-Eau Claire (U.S.H. 12-Roberts Sect.) Road, IH 94, Contr. 1, Proj. I-94-1 (33) 4, St. Croix Co., Grand total $2,277,272. CD 12/12, under LB.

BUILDINGS—LB & CA

▲ Knowlton Constr. Co., 1313 W. Columbus St., Bellefontaine, O., CA $2,289,900 (10 bidders) METHODIST THEOLOGICAL SEMINARY, Stratford, on Rte. 23 just south of DELAWARE, O. Methodist Church, Falls Bldgs., Nashville, Tenn. Bids Dec. 3. CD 11/11.

▲ H. B. Layne Contractor, Inc., McAdams Bldg., Springfield, O., Owner Builds, $6,000,000, 400 HOUSES on 155-acre site, south and west of intersection of U. S. 25 and Jefferson Rd., MIDDLETOWN, O. Work to start in Spring, 1959.

▲ Van Deilen Homes, Whiteford, Mich., Owner Builds, $4,000,000, 300 HOMES, Douglas Village Sub-Division, Secor Rd. and Douglas Rd. bounded by Sterns and Alexis Rds., WHITEFORD, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† Texas—BA About 1/20—U. S. Eng., Box 1229, Galveston, Galveston Seawall exten, Galveston, ENG-41-243-59-36. $1,000,000-$1,500,000.

† Tex., Austin — READINESS CREW BUILDING — BA About 1/21—U. S. Eng., Box 1229, Galveston, constr. readiness crew bldg., Bergstrom Air Force Base, ENG-41-243-59-33. $450,000-$500,000. CD 9/11.

† Tex., Del Rio—SHOP, etc.—BA About 1/22—U. S. Eng., Box 1229, Galveston, shop, armament and electronics, Laughlin Air Force Base, ENG-41-243-59-30. $500,000-$600,000. CD 9/9.

▲† Colo., Colorado Springs—CHAPEL—BA On Or About 2/15—Air Force Academy Construction Agency, P. O. Box 1670, Attn: AFOIE-6/CC, 2 story, bsmnt. academy chapel, landscaping, irrigation and walk lighting on Air Force Academy site, approx. 8 mi. north of here. (IFB) 05-613-59-10. Plans deposit $125. Skidmore, Owings & Merrill, 3333 N. El Paso, archts. and engrs.

BUILDINGS—BA

Minn., Moorhead — LIBRARY — BA 1/8 — State Dpt. Admin., 19 State Capitol, St. Paul, library, Moorhead State College. $800,000. Plans deposit $50. Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, archts. CD 7/23.

† Tex., Fort Hood—REGIMENTAL CHAPELS—BA About 2/10—U. S. Eng., Box 1229, Galveston, regimental chapels (2) ENG-41-243-59-29. $400,000-$500,000. CD 9/8.

Tex., College Station—PETROLEUM—BA 2/10—Texas A&M College Sys., petroleum bldg. $850,000. George Ingram & Glynn L. Harris, 1125 Freeway North, Beaumont, archts. CD 7/31.

HEAVY CONSTRUCTION—LB & CA

† Yancy B. Turner, E. Barraque St., Pine Bluff, Ark., LB $423,725, est. $572,654 bank stabilization, Jack Bradley Bend, revetment and dikes, River Mile 117.2 to River Mile 115.6, Arkansas River Watershed 3 mi. north of Pine Bluff, CIVENG-03-050-59-19, PINE BLUFF, ARK., U. S. Eng., P. O. 867, Little Rock, Ark. Bids Dec. 9. CD 11/21.

▲ KANSAS—State Hy. Comn., Junction City,

Koss Constr. Co., 510 Iowa Des Moines Bank Bldg., Des Moines 9, Iowa., CA $1,597,317, Pt. I-concrete pavement 6.881 mi. beginning approx. ½ mi. north of Abilene at K-15 Interchange; northeasterly on interstate 70; CA $1,528,529, Pt. II-7.3 mi. beginning Dickinson-Geary County line ½ mi. north US-40, southwesterly on Interstate 70, SP 70-21 I 70-4(2) 274; CA $1,488,739, concrete pavement 5.783 mi. beginning Geary-Dickinson County line; easterly on Interstate 70, SP 70-31 I 70-5(21), 288, Geary Co. Grand total $4,614,585. Bids Dec. 5. CD 12/9, under LB.

▲ KANSAS—State Hy. Comn., Hays,

San-Ore Constr. Co., Inc., Box 417, McPherson, Kan., CA $1,066,205, Pt. 1-AA base course and b. conc. 7.446 mi. beginning approx. 1 mi. east Trego-Grove County line and ½ mi. south of Collery; east on Interstate 70; CA $945,576, Pt. II, 6.78 mi. b. conc. west of Wakeeney and ½ mi. south US-40 easterly Interstate 70; CA $1,159,704, Pt. III-8.402 mi. beginning approx. ½ mi. east and ½ mi. south of Wakeeney, southeasterly on Interstate 70, SP 70-98 I 70-2(2) 114 Pts. I, II & III, Trego Co. Grand total $3,171,485. Bids Dec. 4. CD 12/10, under LB.

King Constr. Co., Hesston, Kan., CA $573,218, sewage treatment plant, auxiliaries, appurtenances, etc. NEWTON, KAN. City, City Hall, Newton, Kan. Bids Nov. 4. CD 12/10, under LB.

† Secor Bldg. Co., Box 3251, Oklahoma City, Okla. LB $754,625, est. $776,400, 19,000 sq. ft., bsmnt., rein.-con. foundation walls, masonry walls, air-conditioned Readiness Crew Bldg. Schilling Air Force Base, ENG-23-028-59-25, SALINA, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Dec. 9. CD 11/12.

Tuloma Builders, Inc., 8500 E. 41st St., Tulsa, Okla. CA $475,000, compressor station on Bridgeport-Fritch, Texas line, Mountain View, OKLAHOMA. Natural Gas Pipeline Co., Mountainview, Okla. CD 6/17/55, under Texas-Oklahoma.

† Pool Constr. Co., Box 540, Shawnee, Okla., LB $638,086, est. $872,702, relocate U. S. Hy. 60 across the Oolaugh Reservoir, ENG-34-66-59-14, OKLAHOMA. U. S. Eng., Box 61, Tulsa, Okla. Bids Nov. 13. CD 10/9.

▲ Sharman, Allen, Gay & Taylor, Inc., Bayou Bldg., Houston, Tex., CA Est. $5,160,000, 87 mi. 30 in. gas lines, 28 mi. 36 in. loop lines, in Louisiana, Texas and Mississippi, CA Est. $2,600,000, 65 mi. 30 in. and 23 in. gas line from Leidy Storage Field to its trunk line to New York, TEXAS, LOUISIANA, MISSISSIPPI, ALABAMA, GEORGIA, PENNSYLVANIA, and NEW JERSEY. Transcontinental Gas Pipe Line Corp., 3100 Travis St., Houston, Tex. Grand total. $23,150,000. CD 1/12/50, under Texas and New York;

H. C. Price Co., Bartlesville, Okla., CA Est. $2,450,000, 85 mi. 24 in. gas lines Louisiana (Texas, Louisiana, Mississippi, Alabama, Georgia, Pennsylvania and New Jersey);

Bechtel Corp., 220 Bush St., San Francisco, Calif., CA Est. $7,820,000, 55 mi. 36 in. and 8 mi. 30 in. gas lines in New Jersey and Pennsylvania and 70 mi. 36 in. in Alabama and Georgia (Texas, Louisiana, Mississippi, Alabama, Georgia, Pennsylvania and New Jersey);

Panama-Williams Corp., Melrose Bldg., Houston, Tex., CA Est. $5,120,000, 128 mi. 23 in. gas line from Leidy Storage Field to its trunk line to New York (Texas, Louisiana, Mississippi, Alabama, Georgia, Pennsylvania and New Jersey).

† U. S. Eng., Box 1229, Galveston, Tex., cancelled bids to have opened Dec. 18, channel excav., clearing and grubbing, hy. detour, Victoria area, Calhoun Co., ENG-41-243-59-32, TEXAS. Est. $400,000-$500,000. CD 11/26.

BUILDINGS—LB & CA

Knutson Co., Builders Exchange Bldg., Minneapolis, Minn., Owner Builds, $500,000, 4 story, 39,000 sq. ft. OFFICE BLDG., 212 South Sixth St., MINNEAPOLIS, MINN. Thorshov & Cerny, Metropolitan Bldg., Minneapolis, Minn., archts.

Midwest Piping Co., P.O. Box 433, St. Louis, Mo., LB $632,950 (8 bidders), Contr. 55-power piping for 44,000 KW steam turbine generator unit at James R. Power Station extension, SPRINGFIELD, MO. City Utilities of Springfield, 301 E. Central St., Springfield, Mo. Burns & McDonnell Engineering Co., 95th and Troost, Kansas City, Mo., engr. Bids Dec. 2. CD 10/24;

Dameron Elec. Co., 427 E. Commercial, Springfield, Mo., LB $122,415 (7 bidders), Contr. 54-power wiring for 44,000 KW steam turbine generator at James R. Power Station extension, (Springfield, Mo.).

Brown & Shotlee, Newport, Ark., CA $150,000, est. $176,000, 1 story, 30,000 sq. ft. shoe FACTORY, on 150 x 200 ft. plot, west of Wyman Park, CORNING, ARK. Corning Industrial Development Corp., Corning, Ark. CD 10/16.

▲ Dickmann-Pickens & Bond Constr. Co., Gazette Blvd., Little Rock, Ark., CA $1,000,000-$3,000,000, 132,000 sq. ft. Village SHOPPING CENTER, 17½ acre tract, southeast corner Asher and Hayes Sts., LITTLE ROCK, ARK. Rock Creek Development Co., Inc., J. D. Ashley, pres., c/o Edw. F. Brueggeman, archt., Pyramid Life Bldg., Little Rock, Ark. Bids Nov. 5. CD 11/24, under LB.

Dickmann, Pickens-Bond Constr. Co., 3712 W. Okmulgee St., Muskogee, Okla., CA $732,361, DORMITORY and STUDENT CENTER, (Ark. 3-CH-27 DS), LITTLE ROCK, ARK., Philander Smith College, 812 W. 13 St., Little Rock, Ark. Bids Aug. 8, awarded Dec. 2. CD 9/10, under LB.

▲ Manhattan Constr. Co., 1804 Classen St., Oklahoma City 6, Okla. CA Est. $2,000,000, fdns. and utilities for Western Electric PLANT, West Reno and Council Rd., OKLAHOMA CITY, OKLA., Western Electric Co., 195 Broadway, New York, N. Y. Awarded Dec. 10. Treat Eng. Co., 3104 Classen St., Oklahoma City 18, Okla., engrs. CD 3/12/57.

Shiflet Bros., Contractors, Box 2181, Abilene, Tex. CA $539,000. (7 bidders) ELEMENTARY SCHOOL NO. 1, ABILENE, TEX. Abilene Ind. School Dist., Abilene, Tex. Bids Dec. 4. CD 11/21.

H. A. Lott, Inc., Box 25005, Houston, Tex. CA $750,000, 2 units, Bldg. K & M, 2 story CO-OP HOME for MEN, eight 1 story student family APARTMENTS, HUNTSVILLE, TEX. Sam Houston State Teachers College, Huntsville, Tex. Bids Nov. 26. CD 12/3, under LB.

O'Rourke Constr. Co., 1001 W. Commerce St., Dallas, Tex. LB $510,000, 2 DORMITORIES, Proj. Tx-41-CH-78 (D), IRVING, TEX. University of Dallas, Bd. Trustees, Box 1330, Dallas 21, Tex. Adams & Adams, 701 Exchange Bank Bldg., archts. and Irving D. Barter, 6910 Robinhood St., Dallas, Tex., superv. archt. W. L. Ziegler & Assocs., 1900 N. St. Paul St. and Zumwalt & Vinther, Merc. Sec. Bldg., Dallas, Tex., engrs. Bids Dec. 2. CD 7/3.

▲ E. I. DuPont de Nemours & Co., DuPont Bldg., Wilmington, Del. Owner Builds. PLANT to produce linear polyethylene by low pressure process at Sabine River Works, ORANGE, TEX. CD 6/18/52.

Gunter Hotel, Houston and St. Marys Sts., San Antonio, Tex., rejected bids July 1, HOTEL remodeling and imprvs., SAN ANTONIO, TEX. LB $545,000. CD 7/16, under LB.

Lembke Constr. Co., Box 455, Albuquerque, N. M., CA $510,399, Madison JUNIOR HIGH SCHOOL, ALBUQUERQUE, N. M. Bd. Educ., 724 Maple S.E., Albuquerque, N. M. Bids Nov. 12. CD 11/25, under LB.

† J. W. Bateson Co., Inc., P. O. Box 11307, Walnut Hill Station, Dallas 20, Tex., CA $561,231, 1 story, 130 x 215 ft. shock and vibration type LABORATORY, White Sands Missile Range, Inv. No. Eng-29-005-59-44, LAS CRUCES, N. M. U. S. Eng., P. O. Box 1538, Albuquerque, N. M. Bids Nov. 25. CD 12/11, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., Los Angeles—BA 1/2—Los Angeles Co. Flood Control Dist., 2250 Alcazar St., Proj. 168 and unit 2, portion line "A" of Proj. 172, Burbank. $500,000. CD 11/10.

Calif., Santa Monica—BA 1/5—City, 1685 Main St., constr. 12- to 30-in. water main. $500,000. James M. Montgomery, 535 E. Walnut St., Pasadena, engrs. CD 6/16.

† Ariz., Tucson—ALERT FACILITIES—BA 1/13—U.S. Eng., 751 South Figueroa St., Los Angeles, Calif., constr. alert facilities at Davis-Monthan Air Force Base. ENG-04-353-59-39. $2,000,000. CD 9/10.

▲ Ore., Portland—EXPOSITION RECREATION—BA 1/29—Exposition Recreation Comn., Park Bldg., Exposition Recreation Center. Skidmore, Owings & Merrill, 2040 S.W. Jefferson, archts. CD 10/24, under LB.

BUILDINGS—BA

Calif., Duarte—SCHOOL—BA 1/6—Duarte School Dist., 1427 Buena Vista Ave., 23,000 sq. ft. Valley View School. $390,000. Plans deposit $25. Allison & Rible, 3670 Wilshire Blvd., Los Angeles, archts. CD 9/16.

▲ Calif., San Pedro—HOSPITAL—BA 1/6—San Pedro Community Hospital, 1305 W. 6th St., 4 story, 140 bed hospital. $1,900,000. Extended date. Project Architects, 3460 Wilshire Blvd., Los Angeles, archts. CD 12/3.

Calif., Whittier—SCHOOL—BA 1/6—Lowell Jt. School Dist., 2250 W. Whittier Blvd., La Habra, constr.

frame, masonry, steel constr. Starbuck Intermediate School. $800,000. Daniel, Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., Los Angeles, archts. CD 5/1.

▲ **Wash., Spokane**—SCHOOL—BA 1/7—School Dist. No. 81, W. 503 4 Ave., 1 story, 115,000 sq. ft., frame, masonry Sacajawea Junior High School. $1,300,000. Plans deposit $50. Whitehouse, Price, DeNeff & Deeble, Hutton Bldg., and L. G. Evanoff, American Legion Bldg., archts. CD 8/29.

Calif., Compton—SCIENCE, etc.—BA 1/14—Compton Junior College Dist., 1111 E. Artesia Blvd., constr. science bldgs., classroom addns., alterations. $600,000. Plans deposit $50. Austin, Field & Fry, 2311 W. 3rd St., Los Angeles, archts.

BUILDINGS—SLC

Calif., Redlands—RECREATION CENTER—Empire Bowl, c/o Johnson, Engen & D'Agostino, archts.-engrs., 4868 Oak Park Ave., Encino, soon lets contract, recreation center, incl. 24 lane bowling center, W. Colton Ave. at New York St. $750,000. CD 11/14, under Unclassified.

HEAVY CONSTRUCTION—LB & CA

▲ **WASHINGTON**—State Hy. Comn., Ernest J. Ketcham, chn., Olympia, Bids opened 12/16,

Scarsella Brothers, 2207 South 146 St., Seattle, Wash., LB $1,175,350, constr. 6 mi. Primary State Hy. No. 2, King Co. CD 12/1.

† **G. J. Bouten Constr. Co.**, N. 627 Napa St., Spokane, Wash., LB $407,688, est. $371,255 (13 bidders), 20,000 sq. ft. rein.-con., masonry readiness crew bldg., Fairchild Air Force Base, ENG-45-108-59-23, SPOKANE, WASH. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids Dec. 9. CD 12/1.

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento, Bids opened 12/10,

Fisher & Stokes Constr. Co., 9126 Leroy St., San Gabriel, Calif. LB $969,246 (9 bidders), grade, surf. to constr. 0.9 mi. 4 lane freeway State Sign Rte 1 between Carpenter St. near Carmel and south city limit of Monterey, incl. ramps connections and grade separation for Carmel Hill interchange at Carmel-Pacific Grove Rd., V-Mon-56-1, Monterey Co. CD 11/12.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 12/11,

Griffith Co., 1060 S. Broadway, Los Angeles, Calif. LB $2,564,776 (10 bidders), grading, paving to constr. 2.6 mi. 6 lane freeway U. S. Hy. 80, 0.3 mi. east of Fairmount Ave. and ½ mi. west of Lake Murray Blvd., incl. 3 bridges, XI-S.D.-12SD, San Diego Co. CD 11/12.

▲† **Winston Bros. Co. & Green Constr. Co.**, 1532 S. California Ave., Monrovia, Calif. LB $9,454,196, est. $9,865,457 (9 bidders) main dam and appurtenances, Government Camp for Terminus Proj., Kaweah River, Tulare Co., rolled earthfill type and aux. dam with rock fill outer slopes, 6,800,000 cu. yd. excav. from borrow, 1,300,000 cu. yd. compacted impervious fill, 4,300,000 cu. yd. compacted pervious fill, 1,500,000 cu. yd. random rock fill, 1,900,000 cu. yd. unclassified excav., Spec. 2382, ENG-04-167-59-1, CALIFORNIA. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Dec. 16. CD 10/27.

▲† **Manderbach Constr. Co.**, 1837 Victory Blvd., Glendale 1, Calif. CA $1,076,100, component test bldgs. and utilities, Naval Air Missile Test Center, NBy 19493-58, POINT MUGU, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Nov. 19. CD 12/2, under LB.

▲ **H. C. Smith Constr. Co.**, 3900 Rowena Ave., Los Angeles 39, Calif. CA $1,414,666, Storm Drain Bond Issue Proj. 8, Guirado Ave., Whittier, LOS ANGELES, CALIF. Los Angeles Co. Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Nov. 14. CD 11/20, under LB.

J. Putnam Henck, 3947 Sierra Way, San Bernardino, Calif. CA $693,326. constr. buried 20 m.g. reservoir at 8th St. and Fern Ave., Upland, ONTARIO, CALIF. City, City Hall, Ontario, Calif. Bids Oct. 14. CD 10/22, under LB.

† **OREGON**—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Bids opened 12/11,

Fred H. Stegeman & Assocs., 455 A. St., Lebanon, Ore., LB $499,361, est. $595,091 (11 bidders), grading 8.306 mi. Mt. Hood Loop Rd. and 140 ft. concrete girder bridge, Hood River Co. CD 12/3.

▲ **OREGON**—State Hy. Comn., Hy. Bldgs., Salem,

Ore.—**E. L. McNutt Co.**, 351½ E. Broadway, Eugene, Ore., CA $564,500, grading 2.97 mi. Josephine County line-Evans Creek Section Pacific Hy. FAIP I-5-1(7)50 Jackson Co.; CA $521,084, grading, oiling 7.94 John Day Hy. FAP F-64(3), Wheeler Co.;

Ore.—**Coos Bay Dredging Co.**, Box 217, Coos Bay, Ore. CA $606,722, grading, paving. 1.24 mi. and 437 ft. concrete bridge, Oregon Coast Hy. FAP F-109(9) Coos Co.;

Ore.—**Peter Kiewit Sons Co.**, Box 531, Vancouver, Wash., CA $1,161,017, paving 2.07 mi. Southwest 11th Ave.-Tigard interchange unit, Harbor Drive-Washington County line section, Baldock Freeway FAIP I-5-6-(13) 295 Multnomah Co. Grand total $2,853,325. Bids Nov. 12, awarded Dec. 11. CD 11/20, under LB.

▲ **OREGON**—State Hy. Comn., Hy. Bldgs., Salem,

Warren Northwest, Inc., Box 5072, Portland, Ore. CA $1,507,104 paving 11.25 mi. Lebanon Road-Halsey Interchange section of relocated Pacific Hy. FAIP I-5-4(26) 216, Linn Co. Bids Dec. 9, awarded Dec. 11. CD 12/16, under LB.

BUILDINGS—LB & CA

Twin Lakes Constr. Co., Harold W. Heers, P. O. Box 4055, HC Station, Riverside, Calif. LB $904,000, 75 units, masonry constr., slab floors, Low Rent HOUSING, walks, sewers, fencing, at Nev. 2-3, Marble Manor, located next to Marble Manor 2-2, LAS VEGAS, NEV. Las Vegas Housing Auth., Exec. Dir., 811 N. "I" St., Las Vegas, Nev.

† **Bonnell Constr. Co.**, 760½ Commerce St., Tacoma, Wash., CA $413,134, est. $460,137 (12 bidders), 147 x 256 ft. ENLISTED MEN'S SERVICE CLUB BLDG. in regimental area, Inv. 59-21, FORT LEWIS, WASH. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids Dec. 9. CD 12/1.

Development Corp. of Riverside, 5708 Van Buren Ave., Arlington, Calif. Owner Builds $627,510, 63 stucco DWELLINGS, Challen St., etc., Sierra Tr., ARLANZA, CALIF.

▲ **Larwin Co.**, 8692 Wilshire Blvd., Beverly Hills, Calif. Owner Builds. $1,144,919, 100 DWELLINGS, south of Ball Rd., between Holder and Knott Sts. Tr. 3094, BUENA PARK, CALIF.

▲ **Campbell & Erickson Co.**, 800 R St., Sacramento, Calif. CA $1,276,977, 1 story, 80,200 sq. ft. wood frame, steel frame, Camps Verdes JUNIOR HIGH SCHOOL, North Highlands, DEL PASO HEIGHTS, CALIF. Grant Union High School Dist., Grand Ave., Del Paso Heights, Calif. Bids Oct. 1. CD 10/7, under LB.

Jack H. MacDonald Co., 321 S. San Vicente Blvd., Los Angeles, Calif. CA Est. $650,000. 65,744 sq. ft. FREIGHT TERMINAL area, 4500 E. Bandini Blvd., EAST LOS ANGELES, CALIF. Denver-Chicago Trucking Co., 321 S. Van Vicente Blvd., Los Angeles, Calif.

▲ **Allied Constr. Co.**, 5447 El Cajon Blvd., San Diego, Calif. Owner Builds. $1,570,000, 118 DWELLINGS, Anderson, Burnham, Dorothy and Bosworth Sts., EL CAJON, CALIF.

▲ **D. W. Edwards, Inc.**, 2131 W. Ball Rd., Anaheim, Calif. CA $1,045,200, 82 DWELLINGS, Tract 2408, GARDEN GROVE, CALIF. Lampson Homes, Box 509, Santa Ana, Calif.

Marina Shopping Centers, Ltd., 44 65th Pl., Long Beach, Calif., Owner Builds. $700,000. concrete block and stucco STORE BLDGS., 4600 Pacific Coast Hy., LONG BEACH, CALIF. Hugh Gibbs, 441 E. 1st St., Long Beach, Calif., archt.

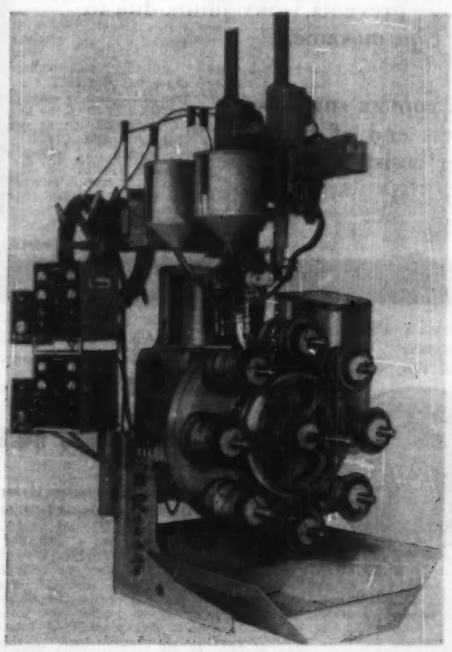
▲ **R. A. Watt Constr. Co.**, 7862 S. Western Ave., Los Angeles, Calif. CA $1,317,100. 114 stucco DWELLINGS, Fallbrook Ave., Minsteel Ave., Royer Ave., Lena Ave., Stagg St., LOS ANGELES, CALIF. Canoga Gardens, 7862 S. Western Ave., Los Angeles, Calif.

Jas. A. Bower, 969 N. La Cienega Blvd., Los Angeles, Calif. CA $514,000, 49 stucco DWELLINGS, Winfield St., Truesdale St., Dorrington Ave., Van Nuys Dist., LOS ANGELES, CALIF. Lomed Homes, Inc., 969 N. La Cienega Blvd., Los Angeles, Calif.

J&B Constr. Co., 5572 Valley Blvd., Los Angeles, Calif. LB $432,710 (5 bidders) Monrovia HIGH SCHOOL

(Continued on page 119)

Revolutionary *Rexarc* Enables High Speed Production in Tractor Roller Rebuilding



Here is the new *Rexarc* MS-8 Automatic Twin Head Roller and Idler Welder and Positioner that revolutionizes roller rebuilding. One operator can do as much high quality work as three to four men with other types of equipment.

•

Mounts 8 rollers at a time. Hydraulic indexing enables virtually a continuous automatic welding operation. Twin heads build up both sides of roller simultaneously.

•

Factory engineer trains your operator, assuring excellent results from the very beginning of welding operations, at no additional cost.

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Write, wire or phone today for complete information about this revolutionary profit-maker.

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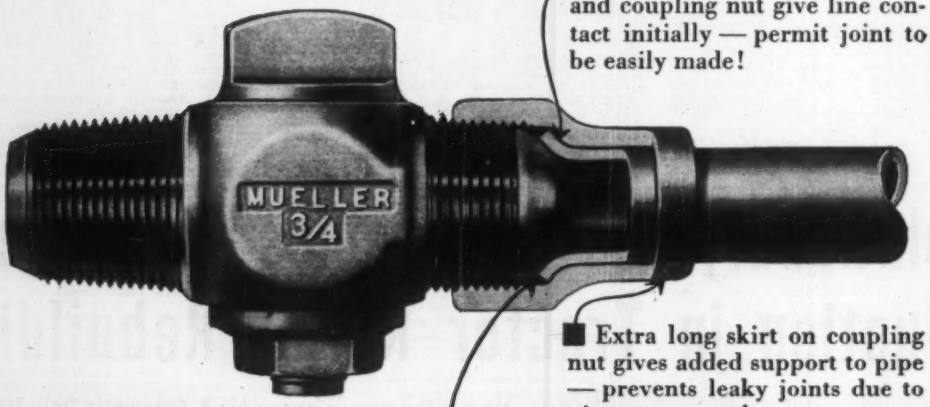
MUELLER®
CORPORATION STOPS

. . . *with* MUELLER
copper service pipe connection

■ Convex surfaces on stop body and coupling nut give line contact initially — permit joint to be easily made!

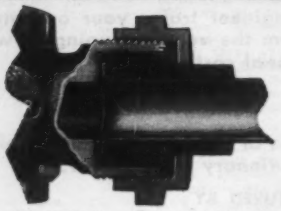


■ Extra long skirt on coupling nut gives added support to pipe — prevents leaky joints due to pipe movement!

Sizes from ½" through 2"

■ Opposed convex surfaces do not compress end of flange — give greater resistance to pipe pulling out.

NEW
INSULATING COUPLING OUTLET



H-15007 Sizes ¾" and 1"

Mueller corporation stops with insulating coupling outlet completely insulate copper service pipe from main to minimize electrolytic corrosion.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles; In Canada: Mueller, Limited, Sarnia, Ontario

(Continued from page 117)

rehabilitation, MONROVIA, CALIF. Monrovia-Duarte Union High School Dist., 845 W. Colorado St., Monrovia, Calif. Bids Dec. 10. CD 11/12.

▲ **Monterey Bldg. Co.**, 1166 E. 58th St., Los Angeles, 11, Calif. Owner Builds. **$1,790,850**, constr. 1,204 sq. ft. 152 stucco DWELLINGS, Tr. 21072, MONTEREY PARK, CALIF.

Crone Co., 922 W. Center St., Anaheim, Calif. CA **$456,000**, 38 frame, stucco, 1,379-1,485 sq. ft. DWELLINGS, Pescados, La Mesa, Manecita, Aranza Drives, NORWALK, CALIF. California Federal Savings & Loan Assoc., 1444 Wentworth, Pasadena, Calif.

Western Empire Constr. Co., P. O. Box 516, Concord, Calif. LB **$538,600** (14 bidders) 34,000 sq. ft. concrete slab on grade, stucco ext. King ELEMENTARY SCHOOL, OAKLAND, CALIF. Oakland Bd. Educ., 1025-2nd Ave., Oakland, Calif. Bids Dec. 9. CD 11/11.

Geo. Alexander Constr. Co., 1280 N. Palm Canyon Dr., Palm Springs, Calif. Owner Builds. **$516,000**, 43 DWELLINGS, Starr Rd., Racquet Club Rd., Desert Holly Circle, Desert Willow Circle, PALM SPRING, CALIF.

Sun Gold, Inc., 4330 Lemon St., Riverside, Calif. Owner Builds. **$731,996**, 56 stucco DWELLINGS, Watkins and Broadbent Sts., University Hills Tract No. 2, RIVERSIDE, CALIF.

John Godwin, 2885 Newton Ave., San Diego, Calif. LB **$449,483** (7 bidders) frame, stucco Toler ELEMENTARY SCHOOL, Morena Blvd. and Baker St., SAN DIEGO, CALIF. San Diego School Dist., 4100 Normal St., San Diego, Calif. J. Thomas Erchul, 530 Broadway St., San Diego, Calif., archt. Bids Dec. 4. CD 11/9/56.

David M. Sapp, 1401 5th Ave., San Diego, Calif. Owner Builds. **$917,350**, 22 APARTMENTS, Glenhaven and Hurlbut Sts., SAN DIEGO, CALIF.

▲ **Claude L. Lindsay**, 7499 Bagdad St., San Diego, Calif. CA **$1,085,675**, constr. 38 frame, stucco DWELLINGS, Marlesta, Hatton and Salizar Drives, SAN DIEGO, CALIF. Lane Plumbing Co., 7499 Bagdad St., San Diego, Calif.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES

December 30 British Columbia

BUILDINGS—BA

▲ **Que., St. Hubert**—HOUSING—BA 2/10—Central **Mortgage & Housing Corp.**, 5801 Monkland Ave., Montreal, supply and operation 200 unit housing near Air Force Base, $1,000,000. CD 12/27/51.

Ont., Ottawa—BIOLOGY—BA 1/8—University of Ottawa, Laurier Ave. E., 3½ story, bsmnt., 95x137 ft. steel structure, concrete slab and cement block walls with Indiana limestone, architectural terra-cotta tar, gravel roof on concrete slab Biology Bldg., incl. concrete fdns., $800,000. Jean Serge Lefort, 86 Greenfield Ave., archt. CD 12/11.

HEAVY CONSTRUCTION—LB & CA

▲ **Scott-Jackson Constr. Co. Ltd.**, Box 66, Toronto, Ont., LB **$524,000**, Alternate **$649,000** (14 bidders) The Queensway Sanitary Trunk Sewer, incl. approx. 3,102 ft. 72 in. tunnel cast in place, 3,015 ft. 38 and 60 in. concrete pipe, 4,080 ft. 8 in. force main, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Dec. 9. CD 12/4;
John Maguire Contg. Co. Ltd., 24 Birch Ave., Toronto, Ont., LB **$373,700** (15 bidders) North York Storm Trunk Sewer in tunnel and open cut approx. 4,741 ft. of 36 to 66 in. (D-13-58) (Toronto, Ont.);
Clairson Constr. Co. Ltd., 7 Connie Ave., Toronto, Ont., LB **$105,793** (8 bidders) Black Creek Sanitary Trunk Sewer, incl. approx. 3,965 ft. 36- to 42-in. pipe (17-58) (Toronto, Ont.);
Joe Paolatto & Sons, 235 Eugenia St., Toronto, Ont., LB **$391,000** (15 bidders) Etobicoke Sanitary Trunk Sewer, incl. approx. 6,983 ft. 60 and 66 in. concrete pipe (Toronto, Ont.). CD 12/5.

SASKATCHEWAN—Sask. Govt., Dpt. Hys., Parliament Bldgs., Regina, Bids opened 12/3,

General Constr. Co. (Alberta) Ltd., Corner 2 and 3 Aves., Lethbridge, Alta., LB **$644,434**, paving 20.33 mi. from Frobisher to Brenfait Proj. No. C-58-63. CD 11/28.

BUILDINGS—LB & CA

Foundation Co. of Ontario Ltd., 603 Clarke Sideroad, Box 847, London, Ont., CA Est. **$750,000**, 1 story, 76,000 sq. ft. WAREHOUSE and FACTORY, Richmond St. exten, incl. truck docks, train sheds, CHATHAM, ONT. Owner, c/o contractor.

Ellis-Don Ltd., Box 852, London, Ont., LB **$876,772** (8 bidders) 1 and 2 story, 220 x 380 ft., structural steel frame, asphalt tile, vinyl asbestos, terrazza flooring 24 room HIGH SCHOOL, LONDON, ONT. East Middlesex High School Bd., John Kennedy, chn., London, Ont. Bids Dec. 10. CD 11/24.

Malan Constr. Co. Ltd., 303 Bering Ave., Toronto, Ont., LB **$587,681**, 1 and 2 story, precast concrete, brick, block, 7 CLASSROOM extens. and PUBLIC SCHOOL renovation, incl. concrete block fdn., TORONTO, ONT. Toronto Bd. Educ., 155 College St., Toronto, Ont. Craig, Madill, Abram & Ingleson, 290 Merton St., Toronto, Ont., archts. M. S. Yolles & Assocs., 111 Richmond St., Toronto, Ont., engrs.

(Proposal Advertisements see pp. 133 to 135)

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3. Number of ties required
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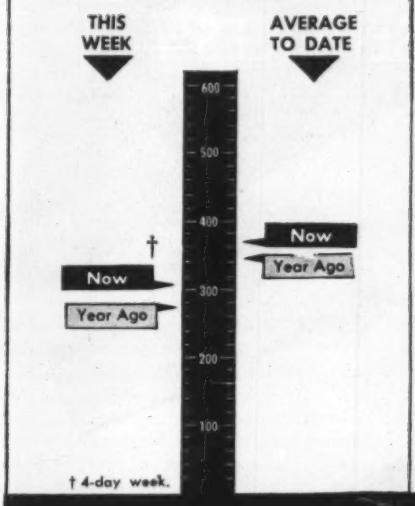
Construction Scoreboard

ACTIVITY THIS WEEK

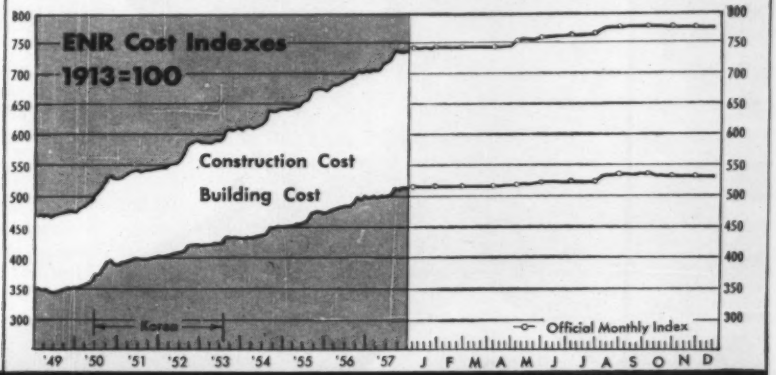
Contract Awards
Millions of Dollars



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Dec. 18 1958	% Change from Nov. 20 1958	% Change from Dec. 19 1957
Construction Cost	773.71	−0.05	+4.90
Building Cost	534.69	−0.07	+3.43

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 52 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$307.6†	$19,164.6	+7
Private	121.9	7,730.2	−8
Public	185.7	11,434.4	+19
State & Municipal	163.8	8,608.4	+16
Federal	21.9	2,826.0	+29
By Type of Work			
Public			
Waterworks	3.5	306.2	−17
Sewerage	12.3	618.1	+11
Bridges*	10.2	713.3	−9
Highways	95.1	3,729.0	+26
Earthwork, Waterways	4.3	1,044.9	+8
Building, Excl. Housing	27.8	2,609.9	+11
Housing	8.0	1,054.6	+64
Unclassified	24.4	1,369.1	+40
Private			
Buildings			
Mass Housing	40.3	3,739.0	+23
Commercial	21.2	1,795.1	+2
Industrial	35.5	1,756.4	−43
Unclassified	25.0	429.0	−14

*Includes private bridges †4 Day week

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Dec. 18	Cum. 51 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$ 41.7	$5,038.7	−11
State and Municipal:			
All Except Housing	158.1	6,177.5	+12
Housing	...	188.0	−36
Federal Loans	3.3	195.3	+1
Federal Aid	...	2,596.2	+20
Total Nonfederal	$203.1	$14,125.7	+3
Federal Appropriations:			
Projects in U. S.	$ ...	$3,946.1	+42
Outside U. S.	...	35.2	+21
Total New Capital	$203.1	$18,106.9	+10

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	November 1958 (millions)	Percent Chage from last Month	Year
Total U. S. (ENR reported)	$113,762	+0.4	+ 2.7
By Ownership—			
Private	49,030	+0.7	+ 5.0
State & Municipal	50,601	+0.3	+ 0.8
Federal	14,131	−0.5	+ 1.4
By Type of Work—			
Waterworks	2,628	−1.6	+ 9.5
Sewerage	3,594	+4.2	+ 7.5
Bridges	3,383	−0.1	+ 3.0
Highways	13,057	−0.3	+ 0.4
Earthwork, Waterways	11,910	−0.3	− 3.8
Public Buildings	20,516	+0.3	+ 2.0
Industrial Buildings	16,763	+0.9	− 0.1
Commercial Buildings	22,294	+0.9	+11.0
Unclassified, Private	9,973*	+0.2	+ 1.4
Unclassified, Public	9,644	−0.2	+ 0.3

* Includes private bridges, $83 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1958 Nov. (millions)	1958 11-months (millions)	Percent Change from '37 Year Nov	Cum.
Total U. S. (ENR reported)	$1,274	$15,040	− 7.0	−21.0
By Ownership—				
Private	632	6,333	+21.0	−24.4
State & Municipal	619	6,523	−16.6	−26.9
Federal	24	2,184	−76.5	+26.0
By Type of Work—				
Waterworks	27	465	+56.4	+ 2.7
Sewerage	180	710	+197.9	+27.7
Bridges	19	411	−78.3	−33.4
Highways	103	1,724	−62.2	−23.1
Earthwork, Waterways	13	635	−10.1	−60.6
Public Buildings	273	3,685	+ 6.9	− 7.8
*Industrial Buildings	181	1,255	−15.1	−59.1
Commercial: Mass Housing	178	2,032	+29.0	+ 0.6
Other Building	239	2,663	+71.6	+14.7
Unclassified, Private	34	384	+13.5	−60.3
Unclassified, Public	28	1,078	−70.3	− 8.9

FLOW OF PROJECTS OUT OF BACKLOG INTO CONTRACTS

Total U. S. (ENR reported)	588	9,386	− 9.3	+ 5.9
By Ownership—				
Private	142	2,547	−32.1	−23.3
State and Municipal	401	5,160	+12.2	+20.1
Federal	46	1,679	−44.7	+34.9

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States Need Construction Cash

- **Officials ready requests for taxes and bond issues to finance state projects; highways get top priority**
- **Federal highway grants create problems for states that are short of funds needed to pay their share**

Officials throughout the country are shaking state piggy banks in a search for new construction funds.

The money that's available just doesn't match spending plans for new state construction. Annual budget requests from state agencies and budget estimates by newly elected administrations are pointing up deficits. In some states, revenues are down. In others, construction plans are too big even with expected revenues.

Highway programs top the list of construction yet to be financed. There is a noticeable urgency in requests by state highway officials, and others, for more state highway money. Chief among their demands is more state funds to match federal-aid funds for which they're eligible.

The two most popular sources of new funds appear to be increased taxes, particularly on gasoline, and new bond issues.

Here is a run-down on problems that confront the states in financing new construction:

• **Alabama**—Incoming Gov. John Patterson may ask a special session of the state legislature for a $50 million road bond issue. The state is eligible for $379 million in federal-aid funds, he says. To match this amount with state funds, $120 million is required. Only $70 million is now available, the governor-elect says.

• **Arkansas**—The State Highway Commission needs $10 million per year to receive full benefit from federal aid. But it will settle for the $7.7 million requested of the 1959 legislature. A one half cent boost in gasoline taxes, to seven cents per gallon, and higher registration and license fees would help support the new request, says commission chairman Glenn F. Wallace.

• **California**—Cities in the League of California want a one cent increase in the state's gasoline tax to provide funds for construction and maintenance of city streets.

• **Connecticut**—Members of the 1959 state legislature have indicated support for a $700 million state highway program. If passed, it would probably be financed by a bond issue, plus federal-aid funds.

• **Florida**—State Road Board Chairman Joe Grotegut has suggested an additional one cent gasoline tax in counties where road needs justify it.

• **Illinois**—In Chicago, the Transit Authority is asking for $31.5 million in public funds for capital improvements in the next three years. Last year the state legislature rejected a CTA request to finance its 20-year, $300 million improvement program with money from state gasoline taxes.

• **Maine**—The state legislature, which expects an over-all deficit of $18.5 million, may pare some money from the $21.5 million highway and $35 million construction budgets.

• **Massachusetts**—Gov. Foster Furcolo and state legislative leaders will seek a half cent increase in the present 5½ cents per gallon gasoline tax when the new legislature meets. The tax boost would permit continued expansion of the state road system.

• **Minnesota**—Two bills to provide increased highway funds will face the 1959 state legislature, according to State Representative Charles Halstad.

A one-cent-per-gallon increase in the state gasoline tax will be proposed to help match federal-aid funds and meet rising highway department costs. Also introduced will be a proposal for $20 million in bonds to improve rural roads.

• **Missouri**—Rox Whitton, chief state highway engineer, advocates a 20-year highway program costing $4.5 billion. Mr. Whitton estimates that a 2 cent per gallon increase in gasoline taxes, an added $36 million to annual revenue, would be enough to support the new highway program.

• **New York**—State Comptroller Arthur Levitt will seek legislation to set up a school bond authority. Reason: to obtain more favorable interest rates on school construction bonds.

• **North Carolina**—State Highway Director W. F. Babcock has suggested to the Budget Commission that more money for the state highway fund should be raised by increasing taxes. He estimates a deficit of $32 million in the next two years. Revenues will be that much under requirements for maintenance and improvement of state roads.

Gov. Luther Hodges has received a report recommending that new sources of revenue be sought for state aid to schools. A variety of new consumer and commercial taxes are suggested.

• **Ohio**—A state-wide conference on education has considered new taxes for additional school funds. Among the possibilities are levies placed on various consumer goods and on commercial income.

• **Pennsylvania**—State Highway Secretary Lewis M. Stevens has predicted an increase in state motor fuel taxes to finance Pennsylvania's highway construction program. Part of the increase will be used to attract professional engineering personnel, he says.

• **South Carolina**—The South Carolina Municipal Association will recommend that the state legislature increase the state gasoline tax by 1 cent per gallon, to 8 cents, to help finance general municipal services and improvements.

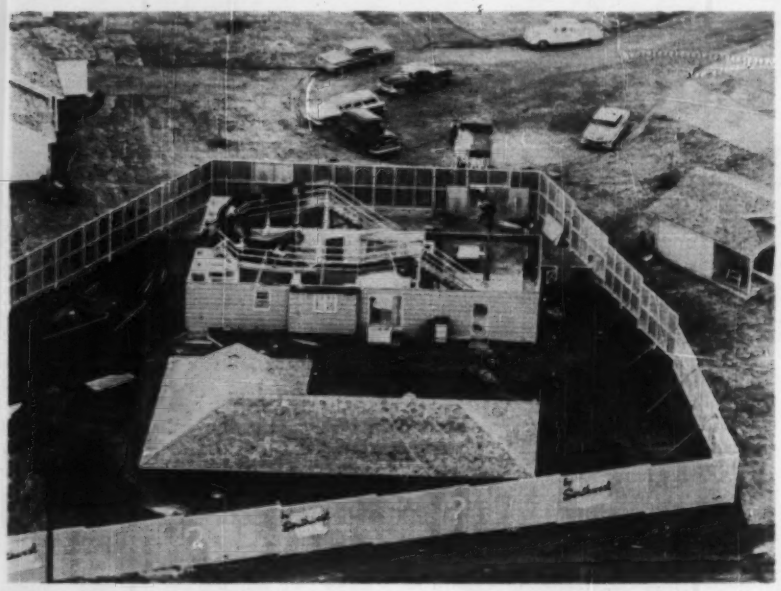
• **South Dakota**—A committee of the state legislative council will suggest that a state agency be granted power to sign prorating agreements with other states. Under such pacts a licensed trucker would pay registration and compensation fees in proportion to the miles traveled in the states where he operates.

• **Virginia**—A one cent increase in gasoline taxes is needed to help match an estimated $1 billion in federal-aid money over the next 10 years, estimates State Sen. A. L. Boothe.

• **Washington**—Controversy is expected over proposed bridges to span Puget Sound, west of Seattle. A legislative committee may propose that the state's motor vehicle fund be used as collateral for a $190 million bond issue to finance the bridge project. Private road associations oppose the plan. They say it would divert state funds that are badly needed to match federal-aid funds.

• **Wisconsin**—A $250 million revenue bond program to build four-lane highways and expressways is "just a start," says John C. Lobb, chairman of Milwaukee's Metropolitan Study Commission. He supports a long-range state highway program paid for from gasoline and motor vehicle taxes.

(*B&F continued on page 124*)



Roofless House Brings Buyers

A Kansas City, Kan., homebuilder has found a simple way to pull traffic to his building site, rush prospective buyers through the model house and keep interest in the area at high pitch. He simply left the roof off the model.

A ramp spans the roofless structure. From it, potential buyers can get a quick, accurate view of the floor plan—and they don't even have to wipe the mud off their shoes. The idea also eliminates the usual pileup of persons waiting to see the model.

When the promotion is ended the roof will be lifted onto the house with a crane, putting the structure in shape to be sold.

The roofless model is the brainstorm of builder Fred Olsen, head of Southwest Construction Inc.

Happy '59 for Manufacturers

Manufacturers of construction machinery and equipment, prefabricated houses and flat glass should all do better in 1959 than in 1958. The new forecast comes from the Commerce Department's Business and Defense Services Administration.

It says the construction machinery and equipment industry will show a "slow rate of pickup" in 1959. Shipments are expected to total about $2 billion in 1959, up 18% from 1958. However, BDSA points out part of the increase will come from 1958 price increases that averaged 4%. In addition, 1959 will not be a record year in terms of sales.

BDSA says the construction machinery industry in 1958 was "characterized" by strikes and was also burdened with a huge inventory totaling $500 million. Normal inventory is placed at about $100 million.

The bureau predicts these two knotty problems will be ironed out in 1959. Inventory will be reduced to a "near-manageable level," as contractors' demands for new machinery rise.

The prefabricated wood housing industry is expected to hold its present 6.6% share of the total one-family housing market in 1959. Output is expected to hit a record of 64,000 units. Biggest question mark in the 1959 estimate, however, is doubt about the flow of mortgage credit for housing, stemming from "possible changes in monetary policies." BDSA qualifies this possibility by saying that in past years the prefabricated housing industry has been less affected by adverse economic conditions than builders of conventional housing.

The flat glass industry probably will increase production in 1959 over 1958. The rise will result from the larger amounts of glass used in 1959 automobiles and houses. BDSA says the industry was hurt in 1958 by large imports of sheet and plate glass, a drop in car production and a general decline in domestic demand.

Banking Bids

St. Paul contractors deposit bids to curb bid-shopping

Some people go to a bank to deposit money. But in St. Paul, Minn., electrican contractors go there to deposit their bids.

St. Paul's American National Bank is part of a bid depository plan aimed at curbing bid shopping and peddling. The St. Paul Chapter of the National Electrical Contractors Association initiated the plan.

Bid shopping is the attempt of a general contractor to get lower subcontract bids by bargaining with subcontractors in a given trade.

Bid peddling is practiced by subcontractors who seek to win a subcontract by bargaining with the general contractor outside of the formal bidding system.

The St. Paul plan is formally called Job Registration Service. Under it, a subcontractor invited to bid on electrical work over $3,000 furnishes the bank with initial information on the job, type of work, and other details. The bank then gives that contractor the names of any others who have also furnished information on that job.

Each contractor deposits a sealed bid with the bank. The bank holds these bids until after the general contract is awarded. Two hours after the contract is let, the bank opens the bids, tabulates the information and forwards it to the NECA chapter manager. He gives the information to those who bid on the job and other contractors who request it.

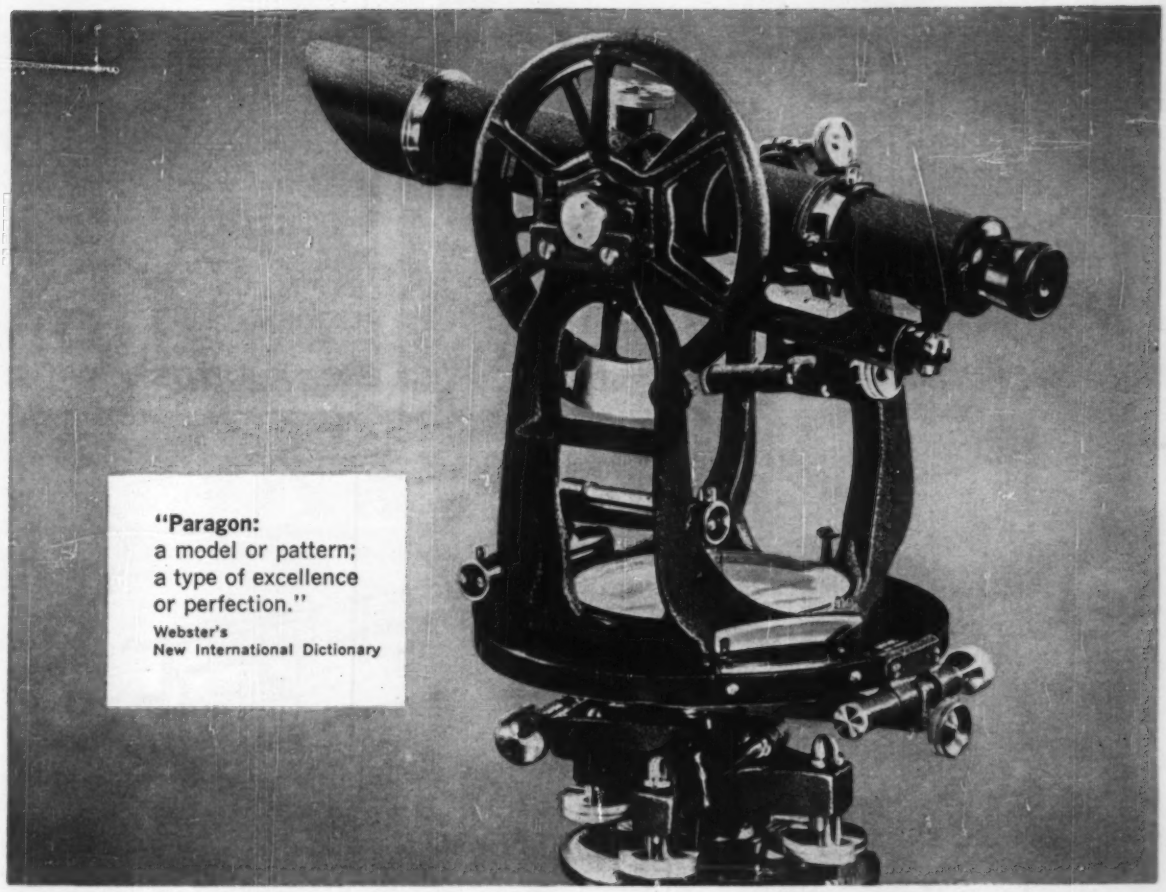
The St. Paul chapter now pays the bank for this service. In the future it may be partially supported by participating contractors.

Participation in the plan is voluntary; and the service is available to members and non-members alike.

Before embarking on this plan, the NECA chapter got assurance from the U. S. Attorney General's office that the plan would not violate anti-trust laws. They sought such clearance because, in the past, NECA chapters and other subcontractor organizations have been sued by the federal government for violations of the Sherman Anti-Trust Act.

"The plan," says NECA, ". . . brings a finality in the competition on subcontract work and makes a public record of the bids, thus discouraging chiseling and under-the-table dealing." NECA cautions its members: "The plan must not be used as a cloak for bid rigging, price fixing or other restraint of trade."

(B&F continued on page 127)



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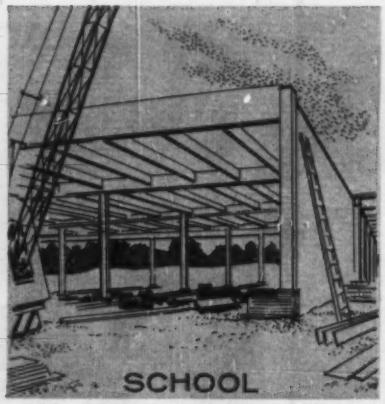

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Monopoly in Sand

Merger of sand companies ruled Clayton Act violation

The federal anti-merger law has been used for the first time against firms directly in the construction industry.

An examiner for the Federal Trade Commission applied the same law on corporate mergers that was used recently to block the merger of Bethlehem Steel Corp. and Youngstown Sheet and Tube Co.

The case involves acquisition of the Sandusky Division of Kelley Island Co. by Erie Sand and Gravel Co. of Sandusky, Ohio.

If the ruling is upheld by the five-member commission and the courts, Erie Sand and Gravel will have to sell dredging vessels, dock property and leases it bought in 1955. Purchase price is estimated at $1 million.

The examiner said the acquisition violated the Clayton Act's merger provisions.

The examiner based his ruling on what he says market facts show. He said lake sand is a separate line of commerce and that the relevant market includes the southern shore of Lake Erie from Buffalo, N. Y. to Sandusky, Ohio, extending up to 12 miles inland.

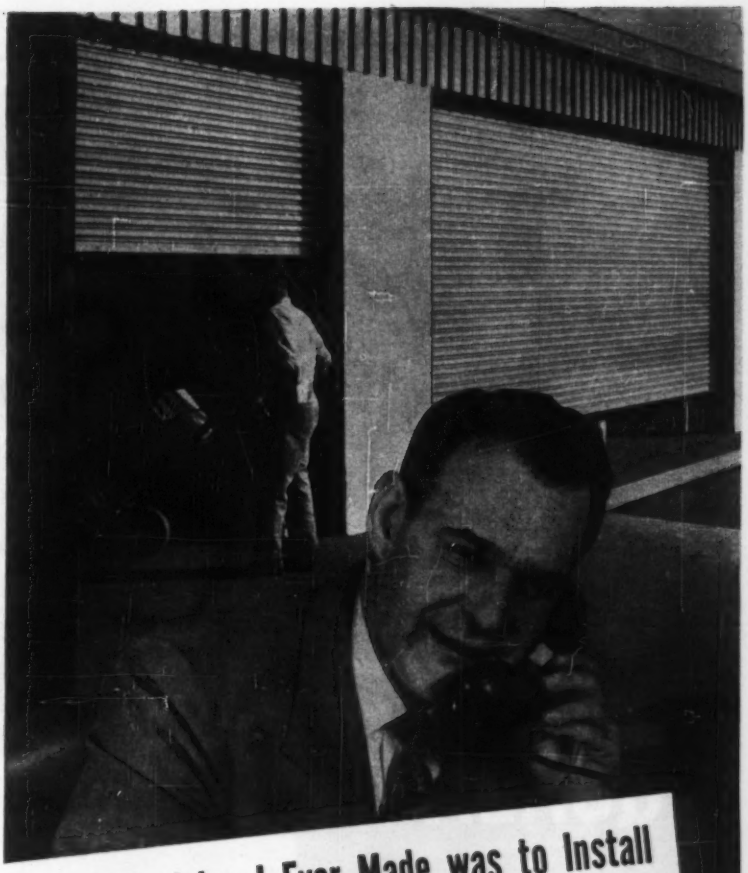
Erie Sand argued that since pit, bank and lake sand are all used primarily to make concrete, all compete with each other. It also said the market area described by the examiner is not a "section of the country" under the law.

Both arguments were rejected. The examiner said bank and pit sand are not competitive with lake sand. He cited the finer quality of lake sand and said the "prohibitive hauling expense" of shipping bank and pit sand into the lake-sand area would make them more expensive than lake sand. A demand exists for lake sand which the pit product cannot satisfy, he added.

The weight of the product in relation to its price and the preference of buyers for lake sand "effectively separate the sand produced in the lakeshore area from the sand produced inland," according to the examiner.

These facts "create a natural market for lake sand within a naturally defined area which obviously can only be served a 'section of the country' within the meaning of the law," he said.

Also a factor in the ruling was a post-acquisition price boost by Erie Sand and Gravel. The examiner said the hike "resulted from Erie's newly acquired dominance in the market, rather than from a business or economic necessity.



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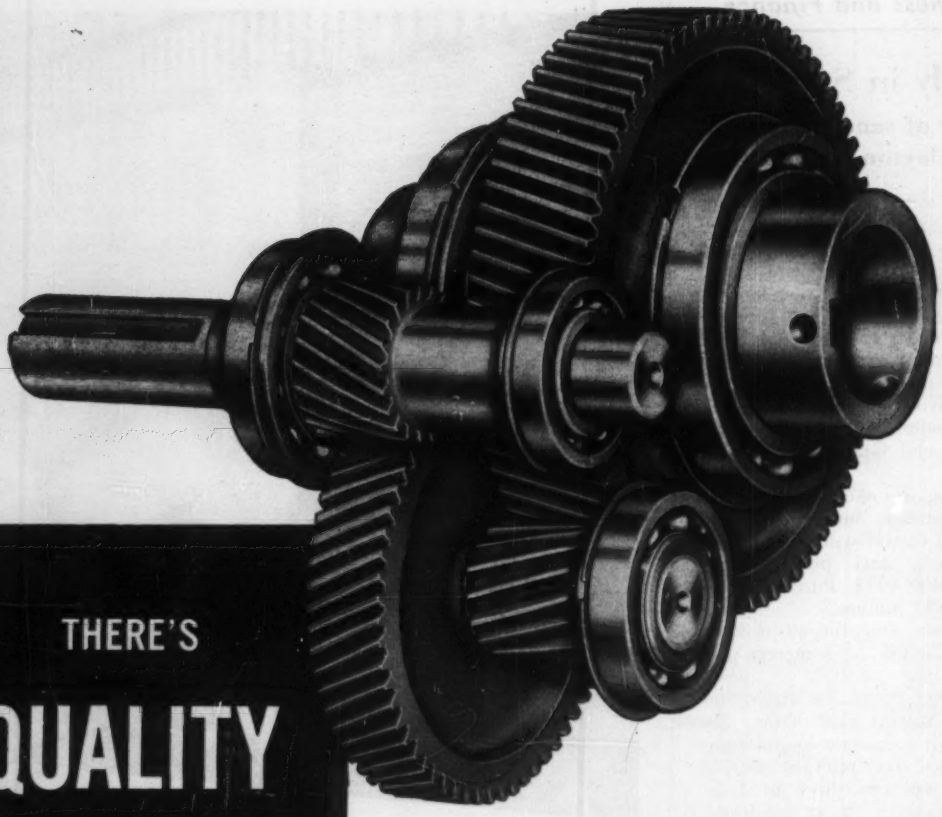

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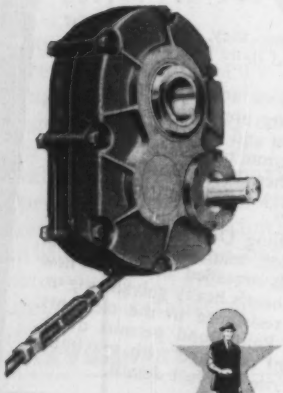

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1958 Bargaining: Here's What It Did:

- Added 15 cents to the basic wage scales of construction workers
- Improved and extended fringe benefits
- Promoted the trend to long-term contracts
- Set the stage for a repeat performance in 1959, but . . .
- Made a start toward reducing indirect labor costs

The Stage Is Set for 1959

Contractors and unions engaged in collective bargaining are barreling along on a limited-access highway with the nearest exit still beyond the horizon.

So far this year they have boosted construction wages another 15 cents an hour, pushing the industry's average hourly wage scale up to $3.34 and giving building tradesmen in many areas straight-time pay of $4.00 or more an hour. This is exclusive of fringe benefits that continue to increase both in size and number.

This upward thrust to labor rates occurred in the face of mounting alarm over rising labor costs. But the big question—will we price ourselves out of the market?—became academic. And efforts to curb labor costs were channeled into the nebulous field of indirect labor costs.

The result is that 1958 bargaining has set the stage for wage increases of similar size next year (see p. 40).

• **Current increases**—Biggest hurdle contractors have to face in next year's bargaining is the simple fact that neither this year's recession, nor wage freeze talk, nor resistance in the form of lockouts and strike acceptance, nor demands for a full day's work for a full day's pay—none of these made much of a dent.

The most popular settlement figure this year was 15 cents an hour, according to reports to ENR. Next most popular settlements, in order of the frequency, were 10, 12½ and 20 cents.

The biggest gain was made by electrical workers (see next page). Least spectacular increases went to laborers and teamsters, whose members are less skilled than those of other construction unions.

Sectionally, workers on the West Coast received by far the highest pay hikes—an average of 19.9 cents an hour. Wage increases for building tradesmen in other parts of the country deviated only slightly from the national average.

Canadian workers fared better in 1958 bargaining than their brothers south of the border. Their average hourly wage increase, according to ENR reports, was 17.3 cents. But their resulting average wage scale of $2.71 is considerably lower than the U.S. scale and the larger gain seems to be part of the ubiquitously popular union trend of "catching up."

• **Long-term contracts**—Long-term contracts, which tend to perpetuate the upward trend of labor costs, were negotiated in more than half the 1958 settlements (see p. 130). Bulk of these were two-year contracts. Settlements for longer than three years were few and scattered.

An analysis of the contracts indicates they cost contractors less than one-year contracts do. The sum of deferred wage increases under a typical two-year contract, for example, is smaller than the sum of pay boosts that are apt to result under two successive one-year contracts.

This year, the average wage increase under one-year contracts was 15.5 cents. But the average 1958 increase under newly negotiated, long-term contracts was 14.5 cents.

Average 1959 deferred wage increase in the new long-term contracts is 13.7 cents; in 1960 it will be 12.6 cents. The 1959 deferred increase of 13.7 cents is the same as the average deferred wage increase under pre-1958 long-term contracts.

These figures are significant for several reasons.

The deferred increases that became automatically due in 1958 set a pay boost floor for 1958 bargaining, which ended with an average increase of 15 cents. The same springboard exists for 1959 and the results are apt to be the same.

The presence of automatic increases also militates, as it did this year, against any voluntary curbs on wage increases. Few will give up what they have won and others want what others get.

• **Some trends**—Three trends worth watching, in addition to long-term contracts, emerged in 1958 bargaining. They relate to area or regional bargaining, installment payment of annual wage increases and fringe benefits.

A union effort to standardize rates within a given area was noticeable in some localities. This means area-wide bargaining and presents an organizational challenge to contractors generally.

Carpenters in three New Hampshire counties, for example, negotiated three-year contracts. Annual wage increases were so rigged that all carpenters in the three-county area will be earning the same pay—$3.27 an hour—when the third deferred wage increase becomes effective in 1960. Substantially the same thing on a broader scale happened in iron worker negotiations in upstate New York.

A sustained interest in installment payment of annual wage increases was also evident. For contractors, this means a saving in labor costs because there is always a gain of a few months before the higher rate becomes effective. Use of the device occurred more frequently in long-term contracts than in one-year agreements.

Fringe benefits, which represent labor's drive for security and equality, remained a popular issue throughout 1958.

Health and welfare benefits received the most attention.

But pension, vacation, paid holiday and apprentice training funds were im-

Long-Term Vs. Short-term Contracts: Here's What Happened in 1958

1. The trend is away from one-year contracts

One-year contracts signed	46%
Contracts signed for more than one year	54%

2. Current increases are lower under long-term contracts

One-year contracts	15.5 cents
All long-term contracts	14.5 cents
Automatic increases under old contracts	13.7 cents

3. Deferred increases are cheaper for the contractor

First year increase	14.5 cents
Second year increase	13.7 cents
Third year increase	12.6 cents

proved or established in many cases.

Interest in vacations was so keen in one area that the local industry will shut down for a one-week vacation for all workers beginning next summer; in another area, one trade gave up two paid holidays for a vacation plan.

It is difficult to draw any conclusions on the method of computing employer contributions for fringe benefits.

Some new contracts do initiate use of the percentage of base pay method, as opposed to a flat sum per hour, and others carry this system over from the past. In these cases, contractors have effectively agreed to fringe escalation, which means automatically higher fringe costs with every basic rate hike.

• On the negative side, this year's negotiations indicated a widespread lack of interest in escalation clauses tying wages to the cost of living.

• Little, if anything, appears to have been done in the direction of uniform contract expiration dates or off-season bargaining.

• The collective bargaining plight of homebuilders was not materially eased.

• Efforts to promote voluntary settlement of jurisdictional disputes through the National Joint Board were not apparent.

• Safety was not a significant issue.

• **Strikes**—About 28% of the 1958 agreements reported to ENR were signed after workers walked off their jobs. Some were brief, others lasted for months. Longest one recorded by ENR was a five-month iron workers' strike in western Texas.

Most of the strikes were over wage demands. Fringe benefits, seniority, travel allowances, featherbedding, hiring hall procedures, starting time and show-up pay played a role in others.

Lockouts, which were a part of the strike picture, appeared to be on the upswing. Areas in which contractors resorted to this as a defense to union whipsawing included Louisville, parts of New Jersey, Lake County (Indiana), Cleveland and Toronto.

• **An awakening**—The effectiveness of contractor resistance to union demands cannot be measured. Although it appears to have had little success in curbing the rapid rise in direct labor costs, it did succeed in focusing widespread attention on three significant questions: Where are we headed? Are we going too fast? Is labor giving as much as it is paid for?

These were some of the questions raised by Richard Gray's wage freeze proposal and by efforts of the international building trades unions to promote worker reduction of unnecessary costs on construction jobs. And they were part and parcel of the problems that flowed from the recession, from use of substitute materials and from production worker performance of industrial construction work.

Despite notable efforts to face these problems in Cleveland, New Jersey, Chicago, Milwaukee and the West Coast, little was accomplished aside from isolated acceptance of the "Ten Commandments," in whole or in part. The commandments represent a 10-point code, recommended by labor at the national level, for the elimination of wasteful work practices.

The important thing, the record indicates, is that this year's bargaining did set in motion, for both contractors and unions, the long, slow process of labor cost analysis and education—a process that may pay bigger dividends in future bargaining.

One hopeful sign is this recent comment by the business manager of the Cleveland Building and Construction Trades Council (AFL-CIO):

"It seems to me that we have reached a point in our economy where it behooves both labor and management to do everything within their combined power to effect economies in our industry. We in the labor end of this partnership cannot continue to take from the industry without putting our fair share into it. . . . It's time to take inventory. Unless some changes take place fast, some of our members are going to be union men in name only."

(*Labor continued on page 132*)

'58 Wage Gains: Averages by Trades

Asbestos Workers	15.8¢	Operating Engineers	15.3¢
Boilermakers	15.8¢	Painters	14.4¢
Bricklayers	13.7¢	Plasterers	14.25¢
Carpenters	15.05¢	Plumbers	17.5¢
Electrical Workers	18.2¢	Roofers	18.2¢
Iron Workers	14.04¢	Sheetmetal Workers	13.9¢
Laborers	12.3¢	Teamsters	10.9¢
Lathers	14.1¢		

Data based on field reports to ENR.

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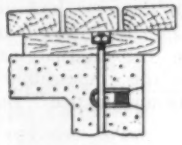

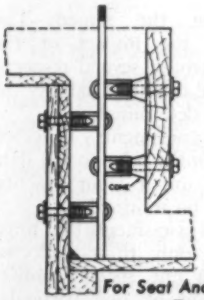

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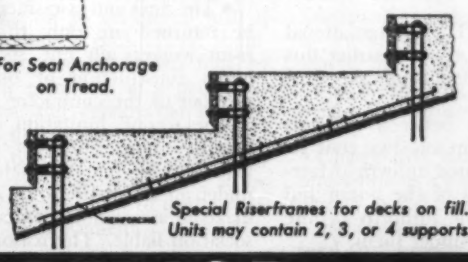

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Union Victory for Professionals

Supreme Court rules right of professional engineers to separate representation must be protected by courts

A National Labor Relations Board decision as to what constitutes an appropriate unit for union representation election purposes may be reviewed by a federal court.

The ruling was handed down last week by the U. S. Supreme Court in a case involving professional engineers at a New York plant of Westinghouse Corp.

The case represents a victory for Engineers and Scientists of America, which is a national federation of unions for professional engineers, and imposes an additional curb on the discretionary powers of the labor board. But it may complicate labor relations generally by allowing a greater number of labor disputes to be thrown into protracted litigation.

• **Issue**—The issue in the Westinghouse case was whether the NLRB has the power to set up a voting unit containing both professional and nonprofessional workers when the professionals object to the inclusion of nonprofessionals.

Under the law, professional employees seeking union representation have the right to vote as a professional unit for or against a particular union. This means, if the right is exercised, that the union winning the election will not be representing nonprofessional workers against the wishes of the professional members. ESA exclusively embraces professional workers and the court's decision is therefore another milestone in its union progress.

• **Facts**—The board, in the Westinghouse case, had thrown 233 professionals and nine nonprofessionals into the same voting unit over the protests of the professionals. It said its right to do so was discretionary. The only limitation on its discretion, it contended, is that it keep the voting unit "predominantly" professional.

An officer of the local union, an ESA affiliate seeking the election, accused the board of abusing its powers and asked a federal district court to order the NLRB to set up a separate election to determine whether the professional employees wanted to be included with nonprofessionals in the same bargaining unit.

The district court and an appellate court agreed with the local union. But the labor board took the position that neither court had the power to review this kind of a labor board proceeding. Ordinarily, court appeals are limited to cases of unfair labor practices.

• **Decision**—The Supreme Court, in a split decision, disagreed with the board.

Speaking for the majority, Justice Whitaker said that the board's refusal to allow a separate election was "an attempted exercise of power that had been specifically withheld."

"Where, as here," he continued, "Congress has given a right to the professional employees, it must be held that it intended that right to be enforced and the courts encounter no difficulty in fulfilling its purpose."

Two dissenting members of the court —Justices Brennan and Frankfurter— viewed the result with alarm.

They said it opens a gaping hole in the Congressional wall against direct resort to the courts and will immerse collective bargaining in the inevitable confusion of litigation. They felt it gives both unions and management a new kind of delaying tactic in labor relations.

"I fear that today the court fashions a major setback for the goals of national labor policy," Mr. Brennan said, "at least until the Congress enacts new language to express a will which I think is already crystal clear."

The Law on Hiring Unfolds

Labor board gives contractors a break and international unions a jolt in its application of Brown-Olds remedy

A contractor who agrees to and participates in closed shop hiring practices may escape the penalties of the law simply because he is not named in the unfair labor practice charge that takes the case to the National Labor Relations Board.

Conversely, an international union, although not a party to the illegal labor contract that establishes the forbidden hiring practices, may incur the penalties of the law on the grounds that its constitution requires the offending affiliated local union to engage in the illegal practice.

These two principles have emerged in the NLRB's case-by-case application of the Brown-Olds remedy to construction industry violations of the Taft-Hartley Act ban against closed shops.

• **Union liability**—The international union that got into trouble earlier this month was the United Brotherhood of Carpenters.

A labor contract between a Texas carpenters local union and two contractor associations required millwright foremen to be members of the union and gave the foremen sole authority to hire and fire millwrights under them.

Union policy required the foremen to hire only members of the union. A closed shop situation resulted, to which the NLRB said the contractors had "in effect" agreed.

The international union's liability for the illegal hiring practice, the board said, rested on a union constitutional provision that requires "members who become foremen" to comply with the union rules and "hire none but members of the United Brotherhood."

Since the local union and the District Council involved in the case had no choice, as union affiliates, except to follow the mandate, the international union must "share the responsibility for the unlawful hiring practice," the board concluded.

• **Limitations on the remedy**—The board restricted the impact of the Brown-Olds remedy in several respects.

In deciding the extent of liability the board made these determinations:

• Dues and assessments collected more than six months prior to the date of the amended unfair labor practice charge need not be returned.

• The dues and assessments that must be returned are only those collected from workers on one specific project under construction by one particular member of the contractor association.

The second limitation is significant because some observers feel that a violation by one association member under an association-wide contract will make all association members or the association liable. The reason NLRB declined to extend the remedy to other employers or projects, it said, was lack of evidence that "exactly the same conditions" existed elsewhere.

The particular contractor concerned was not named as a defendant in the unfair labor practice charge that was filed. It therefore escaped the repayment penalty.

Engineers' Unions Seek Unity

New York union leaders agree to work collectively for common goals, despite discord on basic philosophy

Unity among engineers isn't the goal of profesional societies alone. Engineering unions are also trying to find the way.

Now the leaders of unions and sounding boards in the New York metropolitan area are apparently concluding that some goals can be more easily achieved by collective action.

Last week, a group of engineers active in the union movement met to discuss this question: Can engineering unity be attained despite organizational differences? But the merits of unionization and of inter-union cooperation became the real issues.

They agreed their common aims were 1) to gain more respect and recognition for the professional engineer and 2) to better him economically. They endorsed the idea of unity and agreed to exchange information they gather about salary scales, merit rating systems, medical and pension plans and similar economic problems.

• **Some confusion**—But they disagreed on whom they are uniting. "What is a professional engineer?", they asked. Some argued that he is described in the Taft-Hartley Act; others claimed an engineer is one who does engineering work; and still others named experience in engineering as the prerequisite.

But the discussion failed to solve one of the paramount problems faced by unions for engineers. That is whether professionals and nonprofessionals should be represented by the same union.

An even more fundamental point of contention was the effect union participation has on an engineer. Will it lower an engineer's professional standing? Will engineering unions tend to put all their members on a par, as in labor unions, and destroy the individual's desire to excel?

Inability to resolve these questions, and other basic ones, may prove to be a big impediment to growth in the engineering union movement.

• **Some answers**—A spokesman for an affiliate of the United Auto Workers (AFL-CIO), which has unionized some engineers, gave this advice to the group: When engineers can decide which of their two common aims—economic and professional advancement—is the more immediate, then they will more easily find the direction in which to travel.

The first step necessary to solve the problems of employed engineers is simple—unionize, he declared.

Julius Manson, executive director of the New York State Board of Mediation, said: In fulfilling the goal of economic betterment, engineers will find their desire for more recognition and respect as professionals will also be satisfied.

Represented at last week's meeting were: Engineers Association (Sperry Gyroscope); Conference of Professional and Technical Personnel (Bell Laboratories sounding board unit); Greer Hydraulics Unit and Otis Elevator Unit, Local 365, United Auto Workers (AFL-CIO); and the Consolidated Edison Forum.

Craft Unions Hit

Oil workers fan flames of labor's jurisdictional strife

The jurisdictional conflict between craft and industrial unions in the AFL-CIO flared up again last week.

This time, O. A. Knight, president of the Oil, Chemical and Atomic Workers Union, accused the building trades unions of invading its jurisdiction and charged that the National Constructors Association is abetting the trespass.

The charges were contained in detailed complaints filed by the union with a special committee of the AFL-CIO Executive Council.

The two-man committee, which includes building tradesman Joseph D. Keenan of the electrical workers union, is investigating an industrial union charge that the Metal Trades Department is engaging in organizational activities that violate federation law.

• **Charge**—Mr. Knight says the building trades unions are causing OCAW members to lose their jobs.

He charges the craft unions with refusal to "respect an agreement to stay out of production and running maintenance work which has long been within the jurisdiction of our union."

"Individual craft unions affiliated with both the metal trades and the building trades", he says, "are attempting, as individual unions, to secure jurisdiction over running maintenance work in violation" of an agreement pur-

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portedly reached by craft and industrial unions last February. The pact to which Mr. Knight refers is known as the "Miami Agreement" for the settlement of jurisdictional disputes. It has never been implemented.

• **A complaint**—A major complaint of Mr. Knight is the existence of a national labor contract between the National Constructors Association and the plumbers union.

"Since that agreement was signed," he says, "we have had numerous complaints from various OCAW local unions throughout the United States over the fact that agreements are being entered into by the building trades unions and various contractors such as the Catalytic Construction Co. to do all types of running maintenance work within oil and chemical plants.

Minimum Wage Violations Charged to Roofing Firm

A Providence roofing firm has been charged with civil contempt of a federal court injunction ordering it to pay minimum wages of $1.00 an hour to all its 30 employees.

The injunction was obtained last June under the Fair Labor Standards Act, which many mistakenly feel is no concern of construction because its wage levels are so high.

The contempt citation is being sought by the U. S. Department of Labor against Eagle Cornice Co., one of the state's largest roofing firms.

Wage Boosts Helped Check Recession, Says AFL-CIO

The AFL-CIO contends that "trade union strength and collective bargaining" are among the forces that "prevented the recession from developing into a full blown depression."

In the last issue of its "Economic Trends and Outlook," the federation says that wage increases won by workers "during the months of declining output and jobs" bolstered consumer income enough to prevent a sharp drop in retail sales. Such a drop, it asserts, could have "touched off a downward spiral."

This is the argument that killed last year's wage-freeze proposal of building trades president Richard J. Gray.

The AFL-CIO claims that wage and salary increases "offset almost two-thirds of the decline in total income that would have otherwise resulted from layoffs and cutbacks in working hours between August 1957 and June 1958."

OFFICIAL PROPOSALS

Bids: January 13, 1959

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS

For Construction of Additional Access Road, Utilities, Boat Facilities and Site Development on Barnhart Island near Massena, St. Lawrence County, New York
Specifications No. PA-5-11045
St. Lawrence Contract No. 51

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for Construction of Additional Access Road, Utilities, Boat Facilities, and Site Development on Barnhart Island, near Massena, St. Lawrence County, New York, until 10:30 A.M., Eastern Standard Time on the 13th day of January, 1959, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of the principal items of work are as follows:

Excavation, unclassified ...	9,000 cu. yds.
Embankments	10,600 cu. yds.
Foundation course gravel..	3,370 cu. yds.
Asphaltic concrete pavements	310 cu. yds.
Reinforced concrete	186 cu. yds.
Concrete terraces	370 sq. yds.
Water supply well.....	180 lin. ft.
Topsoiling and seeding.....	3.2 acres
Floating dock and ramp....	1 each

All work shall be completed on or before August 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars $(5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: January 20, 1959

Contract NA-470.003

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
CONTROL TOWER
LIGHTING CONTROL PANEL AND WIRING

Sealed proposals for furnishing and installing a field lighting control panel and terminal cabinets in the Control Tower, together with wiring to the switch house, all at Newark Airport, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 20, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, December 25, 1958

Bids: January 13, 1959

Contract NYA-650.070

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CENTRAL HEATING AND REFRIGERATION PLANT
MODIFICATION TO SPRINKLER SYSTEM IN COOLING TOWERS

Sealed proposals for the performance of alterations to the sprinkler system in the cooling towers for the central heating and refrigeration plant in the Central Terminal Area at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 13, 1959, at which time said proposals will be opened and read in Room 1108.

Contract Documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, December 25, 1958

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5132) will be received at Denver, Colorado, until January 22, 1959, for furnishing one (1) 10 by 20-foot fixed wheel gate for the outlet works at Trinity Dam, Central Valley Project, California. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Engineering News-Record

Reaches Your Local Contractors

Its distribution among the contractors of any one state is in proportion to the number of contractors situated in that state. The Official Proposal Columns of *Engineering News-Record* offer precisely the same efficient service to municipalities, counties, state and federal departments in every section of the United States.

OFFICIAL PROPOSALS enable you to get the greatest variety of bids —and so to get the lowest prices consistent with the best work.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: January 27, 1959

McKeesport Sewage Treatment Project

Sealed proposals will be received by the Municipal Authority Of The City Of McKeesport, 201 National Bank Building, Fifth Avenue and Sinclair Street, McKeesport, Pa. until 10:00 A.M., Eastern Standard Time, January 27, 1959, and will be publicly opened and read shortly thereafter in the City Council Chamber on the sixth floor of the Peoples Union Bank Building, Fifth and Walnut Streets, McKeesport, Pa.

Separate proposals will be received upon nine (9) parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check or Bid Bond in an amount not less than ten (10) per cent of the bid total.

Copies of the Contract Documents may be seen at, and obtained from the office of Gannett Fleming Corddry and Carpenter, Inc., (P. O. Box 5073) Pittsburgh 6, Pa.; they may also be seen at (but not obtained) at their office at 600 North Second Street, Harrisburg, Pa., and at the office of the Municipal Authority Of The City Of McKeesport, 201 National Bank Building, McKeesport, Pa. No more than two (2) sets of any particular contract may be obtained by a prospective bidder. A deposit of the amounts indicated below will be required for each set. Deposit checks shall be made payable to Gannett Fleming Corddry and Carpenter, Inc.

Contract One—CONSTRUCTION OF INTERCEPTING SEWERS, SEWAGE REGULATORS, FORCE MAINS, SIPHONS AND APPURTENANCES. $60.00
- (Part A) Construction of the Upper Monongahela River Interceptor, Sewage Regulators and Appurtenances.
- (Part B) Construction of the Lower Monongahela River Interceptor, Sewage Regulators, Force Mains, Siphon, and Appurtenances.
- (Part C) Construction of the Youghiogheny River Interceptor, Sewage Regulators, Force Mains, Siphon, and Appurtenances.
- (Part D) Construction of the Long Run Interceptor and Appurtenances.

Contract Two—GENERAL CONSTRUCTION OF SEWAGE TREATMENT PLANT, OUTFALL SEWER, ROADS, PUMPING STATIONS AND APPURTENANCES $60.00

Contract Three—PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT AND PUMPING STATIONS..... $25.00

Contract Four—HEATING WORK IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT AND PUMPING STATIONS..... $25.00

Contract Five—ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT AND PUMPING STATIONS..... $25.00

Contract Six—EQUIPMENT AND PIPING IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT AND PUMPING STATIONS $60.00

Full refund will be made (only to actual bidders on the six (6) prime contracts noted above) for return of one (1) set, no more, of a particular contract in good condition within fifteen (15) calendar days after closing date for receipt of bids; refund for return of all other sets in good condition within the same period, will be fifty (50) per cent of deposit. No refund will be made for Contract Documents returned later than fifteen (15) calendar days after date of receipt of bids.

A Bidder may submit proposals on any or all of the four (4) parts of Contract One.

Bidders offering separate proposals for Contracts Two and Six, or for Contracts Three, Four, and Six, may also submit combination proposals for Contracts Two and Six, or for Contracts Three, Four, and Six, respectively.

THE MUNICIPAL AUTHORITY OF THE CITY OF McKEESPORT.

Gannett Fleming Corddry and Carpenter, Inc., Engineers.

Bids: January 27, 1959

Contract PN-560.004

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS NOS. 197, 198, 261 & 262

Sealed proposals for the construction of four cargo distribution buildings at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 27, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115 on or after January 2, 1959. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, December 25, 1958

Bids: January 15, 1959

Municipal Building City of Grosse Pointe Woods, Michigan

Sealed bids for the erection and completion of the Administration wing and the Council-Court Room wing of the proposed Municipal Building to be located at 20025 Mack Avenue in the City of Grosse Pointe Woods, Michigan will be received until 3:00 o'clock P.M., E.S.T. on Thursday, January 15, 1959 at the Office of the City Clerk, City of Grosse Pointe Woods 36, Michigan, at which time and place they will be publicly opened and read aloud.

Plans and specifications may be obtained at the offices of the Architects and Engineers: Malcomson, Fowler & Hammond, Inc., Architects, 1217 Griswold Street, Detroit 26, Michigan and Snyder & McLean, Inc., Engineers, 18461 West McNichols Road, Detroit 19, Michigan, and may be inspected at the Municipal Building, 20775 Mack Avenue, Grosse Pointe Woods, Michigan.

PROPOSALS MUST BE SUBMITTED ON FORMS FURNISHED BY THE ARCHITECTS AND ENGINEERS.

All Bids submitted will remain firm for a period of thirty (30) days after the official opening of Bids. The City of Grosse Pointe Woods reserves the right to reject any and all Bids, in whole or in part, to waive any informalities in the bidding, and to accept any bid it deems to be in the best interest of the City.

CITY OF GROSSE POINTE WOODS
LEONA D. LIDDLE
City Clerk

Bids: February 6, 1959

Directorate of Highways Ministry of Public Works and Communications Republic of Honduras

ADVERTISEMENT FOR BIDS
for
Highway and Bridges
Route No. 18—West Road Between Santa Rosa de Copán and Chamelecón
CONTRACT No. 503-C(M)

Sealed Proposals for the above noted contract described herein will be received by the Director General of Highways at the Offices of the Ministry of Communications and Public Works, Tegucigalpa, Honduras, until 10 a.m. Honduras Official Time on February 6th, 1959 and then publicly opened.

The work to be done under this Contract shall be commenced on the date specified in the Notice to Proceed, or such earlier date mutually agreed upon by the Ministry and the Contractor. All work under the Contract shall be completed within 730 calendar days after such date, and consists of furnishing all plant, labor, materials, and equipment, and performing all work in strict accordance with the Specifications, Schedules and Drawings forming parts thereof, for the construction of portions of the West Road, (Route No. 18), between Santa Rosa de Copán and Chamelecón.

Proposals shall be submitted covering all the work on the West Road, (Route No. 18), between Santa Rosa de Copán and Chamelecón, as delineated on the Unit Price Schedule Form.

The approximate quantities of the principal items of work are:

Unclassified Excavation	1,350,000 CM
Sub-base	52,000 CM
Reinforcing Steel	1,700,000 LBS
Structure Concrete	9,800 CM
Untreated Timber Piles	23,000 LM

Prospective bidders can obtain copies of the plans, specifications and contract documents for a fee of 200 Lempiras from the Office of the Director General of Highways, Tegucigalpa, Honduras. A Contractor's Financial Statement and Experience Questionnaire and a Plan and Equipment Questionnaire on forms supplied by the Directorate of Highways will be required of all bidders. All proposals must be on the forms prescribed by the Directorate of Highways and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of ten (10) percent of the total amount shown in the Proposal Form Unit Price Schedule in the form and manner specified in the Instructions to Bidders.

Individuals or firms doing business under fictitious names and all foreign corporations shall register with the Ministry of Communications and Public Works, Tegucigalpa, Honduras, before any proposals submitted by such corporations, individuals or firms will be considered.

Award of the above contract, if any award be made, will be to the lowest responsible bidder or bidders. The Government reserves the right to reject any and all proposals and further reserves the right to waive any informality in proposals received when such rejection or waiver is in the best interest of the Government.

The Government of Honduras has entered into a Loan Agreement with the International Bank for Reconstruction and Development for a loan in various currencies to finance the foreign exchange costs of a Highway Construction Project of which this contract will form a part. The Government of Honduras has also entered into a Loan Agreement with the Development Loan Fund of the United States Government for a loan to finance the local currency costs of the Project.

DIRECTOR GENERAL OF HIGHWAYS
December 11th, 1958

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

JANUARY 8th ISSUE CLOSES DECEMBER 29th

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Assist. Prof.—To teach undergrad. courses in structures and mechanics. Salary open. Civil Eng., Univ. of No. Dak., Grand Forks.

Electronic Computer Application Engineer Wanted. Midwestern consulting Engineering firm needs graduate engineer experienced in electronic computer application to engineering problems. Reply in detail to P-9211, Engineering News-Record.

Projects Manager wanted for position with expanding general contracting firm with home office in Ohio; specializing in industrial, commercial, and public works. Top level management position for man experienced in organizing and managing jobs of considerable magnitude; extensively experienced in expediting, estimating, pricing, purchasing, and dealing with sub-contractors and owners. Must be ambitious, have intense initiative, and be willing to travel. Prefer a graduate engineer or equivalent. If you are lookinng for a permanent position with an aggressive concern, where you can exercise your abilities, and be well compensated for same, send complete history, including education, past experience, references, salary expected, and photograph, if available, to P-9495, Engineering News-Record. All replies will be held in confidence and promptly answered.

Wanted Architectural Draftsman with 2 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8590, Engineering News-Record.

Experienced Sanitary Engineer—desired by well-established consulting firm. Must be capable of preparing designs, checking shop drawings, etc., for sewage treatment plants. Location, Maryland. Salary, open. All replies kept confidential. Send resume of qualifications to P-9448, Engineering News-Record.

Wanted Registered Architect with 4 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8615, Engineering News-Record.

Civil Engineer-experience and ability in design of sewers-sewerage treatment plant. State educational background, experience and salary desired. P-9576, Engineering News-Record.

Structural steel designer and estimator, industrial and miscellaneous steel structures, steel plate fabrication. Graduate engineer, 30-40, minimum 5 years design experience. Permanent employment, paid vacations, group insurance plan, good schools. Excellent opportunity. Location Mid-Continent. Reply fully, giving resume of experience, education, age and salary requirements to P-9557, Engineering News-Record.

• EMPLOYMENT SERVICE

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 48 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

STRUCTURAL STEEL DESIGNERS & ESTIMATORS

Wanted immediately. Must be experienced and have good personality. Opportunity to be branch office manager. Prefer man in forties.

This leading Southern company has plants located in six cities.

Replies will be held in confidence. Interviews arranged with qualified applicants.

Please send complete resume to

P-9454, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

• POSITIONS WANTED

Const. Supt. 25 yrs experience in commercial buildings. Available now. PW-9328, Engineering News-Record.

Prestressed Concrete Plant Manager or Superintendent BCE. 30. 8 years heavy construction experience in supervisory capacity including 4 years as Field Engineer, Plant Supt. and Plant Manager with major firm engaged in manufacture and installation of prestressed concrete structures. Desire locate in South or West Coast. PW-9425, Engineering News-Record.

Concrete Inspector, Canadian, recent immigrant. Age 30, 10 years experience in hydroelectric and heavy industrial concrete inspection. Member A.C.I. & A.S.T.M. Excel. references. Experienced all phases of control and construction. PW-9472. Engineering News-Record.

Chief Estimator—Graduate civil engineer, 35 years old. Responsible for estimates on multimillion dollar projects, buildings, sewage treatment plants, power houses, bridges. Careful, judicious buyer. PW-9446, Engineering News-Record.

Structural designer, 20 yrs. exp. on various steel & concrete structures. Four years on bridges. Cornell grad. East or mid-west. PW-9445, Engineering News-Record.

Construction Superintendent-Civil Engineer Thirty years varied experience embracing all phases of Engineering Construction and design-earthwork, municipal projects, refineries and ptro-chemical plants, industrial buildings. Executive and administrative ability. Seeking challenging responsible position. Available after January 1st. Free to travel. Southern location preferred. PW-9521, Engineering News-Record.

Contractors sup't. or engr. BSCE Highway structures & paving. PW-9529, Engineering News-Record.

Construction estimator-superintendent for specialized non-building general construction. Must be capable of taking complete charge of operation. Based in Phila. Salary and percentage. Write PW-9546, Engineering News-Record.

ERECTION ENGINEER

Large erection company requires graduate civil engineer with experience in design of erection equipment, guy derricks, towers, booms, etc. In addition would be required to prepare erection instructions and manuals. This position has an excellent future for man with ten to fifteen years experience. Send complete resume to

A. WOOLRICH
GRAVER TANK AND MFG. CO., INC.
EAST CHICAGO, INDIANA

• POSITIONS WANTED

Field Office Engineer—Estimator, 26, BSCE, heavy construction experience. Desires position with gen'l contractor. N. Y. Area. PW-9499, Engineering News-Record.

Construction Project Manager, Graduate Engineer, Age 41, 20 years industrial experience. Organization, co-ordination and construction of complete refinery and chemical plant installations. Have following of one or more complete job organizations, experienced field supervisors, office warehouse, etc. Foreign assignment preferred. Will relocate. Top salary expected. Available March 1st. PW-9541, Engineering News-Record.

Engineering Designer, Specification Writer, Draftsman. Chemical plant layout, piping design, waterworks and sewage treatment plant contracts and specifications, trade journal articles. B.S., Chem. Eng., M.I.T. Age 44. Met. N.Y. area. PW-9555, Engineering News-Record.

Civil Engineer, 24. BCE. Experience in structural design, bridges & industrial, and in manufacture of precast-prestressed concrete. PW-9573, Engneering News-Record.

Resident Engineer—Supervision of Construction large industrial projects. Presently employed overseas. Desires change of location 20 years overseas. Resume on request. Available January. PW-9577, Engineering News-Record.

When Answering
BOX NUMBERS...

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

POWER PLANT SUPERINTENDENT

A long-established Canadian electric utility company, presently building a steam-electric generating plant, designed for ultimate capacity over 750,000 kilowatts, to burn oil or natural gas or mixed fluid fuels, requires a Plant Superintendent to take charge.

Preference will be given to applicants eligible for registration as Professional Engineer in Mechanical Engineering. At least ten years' responsible experience in operation and maintenance of large steam plants will be required.

Salary open, depending on qualifications and experience. First-class living, social, and recreational amenities both urban and rural within twenty miles motoring distance. Modern pension plan, medical coverage, other Company benefits.

Appointment will be made preferably by April 1959 and will require assumption of duties at site not later than 30 June, 1959. Initial responsibility will include inspection of construction, assembly and test.

Reply by letter in confidence giving full particulars of personal history, education, and experience to:

STEVENSON & KELLOGG, LTD.
Consulting Management Engineering
10 Eglinton Avenue E., Toronto, Ontario

ESTIMATOR-ENGINEER WANTED

A fine job opportunity for a young engineer with estimating experience. Opportunity includes estimating, job expediting, checking shop drawings and some design.

Southern New England Contracting Co.
66 Sanford Street Hartford, Connecticut

WANTED

ESTIMATING ENGINEER

Midwestern consulting engineering firm needs engineer with estimating experience for contractors and with consulting experience to organize and head estimating.

P-9092, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

FOREIGN EMPLOYMENT

DISTRICT INDUSTRIAL ENGINEER

BS or MS Degree Industrial or Mechanical Engineering with post graduate studies production control, tool design, material handling, industrial psychology, etc. Practical industrial experience required with at least 2 years supervisory capacity in fabricating industry. Experience as machinist or tool maker desirable.

SMELTER ENGINEER

BS Degree in Metallurgical, Mechanical or Civil Engineering. At least 5 years experience required in pyrometallurgical industry, preferably copper smelting, 2 years of which should have been in supervisory position.

ASSISTANT MILL METALLURGIST

BS Degree Metallurgy from recognized School of Mines and Metallurgy, also basic knowledge inorganic and organic Chemistry. Should know Spanish or be able and willing to learn it quickly, also 3 years experience required in operation of milling plants, using crushing, grinding, and froth flotation including some practice in testing methods.

Excellent opportunity large copper company Chile, South America. 2 year contract with transportation both ways and salary while traveling paid by Company. In reply give complete details.

P-9559, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Work will be in the general offices in St. Louis. Interviews can be arranged in Washington, D. C., and San Francisco also.

Please write fully, including salary data, to

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ENGINEERS — ARCHITECTS
915 Olive St. Louis 1, Mo.

ENGINEERING DESIGN PERSONNEL

Highway & Bridge Designers, Highway & Bridge Draftsmen
Openings in Pennsylvania, Ohio, Maryland & West Virginia

Career opportunities for individuals interested in professional recognition ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

EXPERIENCE REQUIRED

Mail Resume To F. W. AHERN, Personnel Director

MICHAEL BAKER, JR., INC. *Consulting Engineers*
Baker Building Phone: SPruce 4-3010 Rochester, Penna.

RESIDENT ENGINEER

To supervise construction of 122 kilometer highway in Iraq. Fifteen years experience required. Excellent salary plus furnished house free for self and family. Approximately two to two and one half years term. Please send complete resume and specify salary required.

HARZA ENGINEERING COMPANY
400 W. Madison St., Chicago 6

SENIOR BRIDGE CONSTRUCTION ENGINEER

for work in

SOUTHEAST ASIA

Senior engineer needed to complete technical party. Work involves supervision of construction of highway bridges in South Vietnam. High degree of initiative, judgment and skill in handling human relations required in addition to professional competence. Eighteen-month minimum employment agreement. Only those interested in difficult and challenging work shall apply.

Minimum 20 years experience required in this highly responsible position, including deep water foundations and steel erection. Age limit 65 years. Those willing to travel in single status will be given preference.

CAPITOL ENGINEERING CORPORATION
DILLSBURG, *CONSULTING ENGINEERS* PENNSYLVANIA

SOILS ENGINEER

Long-established progressive company, known as a leader in stabilizing and dewatering excavations, offers permanent, rewarding research and development position on headquarters staff. You must have technological background and field experience in heavy construction work, with emphasis on ground-water seepage and pumping problems.

The position offers many employee benefits, liberal salary commensurate with ability. Please send resume of experience, etc. Replies held in confidence. Our staff knows of this ad.

P-9509, Engineering News-Record
520 N. Michigan, Chicago 11, Ill.

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EQIUPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

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BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

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SELL, RENT or BUY

FOR DAMS, BRIDGES, DREDGE WATERS, FILTRATION AND SEWERAGE PLANTS
FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE NEW YORK

LIDGERWOOD 3 DRUM STEAM HOIST

Front drum, 42,000 lbs line pull. 2 rear drums, 35,000 lbs each line pull. Cylinders 12 inches by 12 inches. Price Right.

FS-9505, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• CONTRACT WORK WANTED

Engineering group available for studies, design, detailing or contractor's services. CWW-9528, Engineering News-Record.

• SPECIAL SERVICES

General Drafting Service.—Valuable restorations capably redrawn. Efficient, accurate, dependable drafting service. P.O. Box 1886, Pittsburgh 30, Pa.

• OFFICE SPACE FOR RENT

B'way, 350—New York City. New light modern building, 8,600 sq ft. Ideal for Engineering concern, located near all transportation. Will subdivide to suit. WO-2-0230.

LOCOMOTIVES & LOCOMOTIVE CRANES

1—25 Ton Diesel Electric Locomotive
1—45 Ton G. E. Diesel Electric Locomotive
1—25 Ton Ohio Diesel Locomotive Crane
1—30 Ton Browning Diesel Locomotive Crane
1—25 Ton Bay City 190T61 Truck Crane

B. M. WEISS COMPANY
Girard Trust Bldg. Philadelphia 2, Pa.

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1201 Combination Shovel and Dragline. Serial No. 324613. Standard Shovel Front. Machine Completely Rebuilt. Nov. 1957 New Cummins R. L. Diesel Engine. Not used after being rebuilt. **Price Comb. $40,000. Shovel Front only $4,500**

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Compton Coal Auger Model 36 Serial No 7-1055-071-F 160 ft. 28" Augers. Excellent Condition. **Price $30,000**

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Phone: Chestnut 14471

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WANTED

First-class, experienced building Estimator for responsible position with established contractor. Salary commensurate with qualifications and responsibility.

J. M. ODOM, General Contractor
P. O. Box 774 Austin, Texas

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25 TON WHITCOMB DIESEL ELEC. LOCO. 1948
50 TON AMER. GUY DERRICK, 115' MAST, 100' BM.
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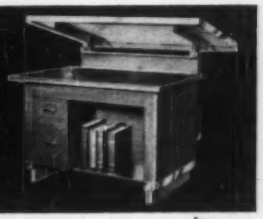

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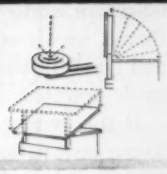

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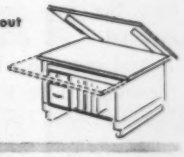

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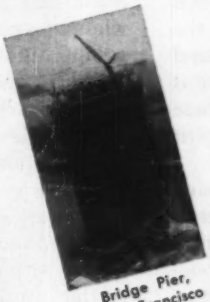

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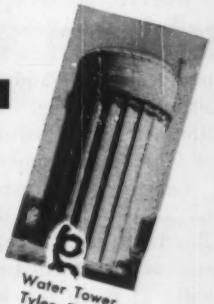

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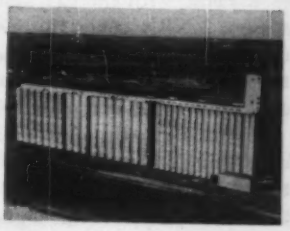

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Blessings in Abundance

ONCE AGAIN, as for many centuries past, the entire Christian world pauses in its labors to celebrate and give thanks for its religious heritage. In the spirit of peace and goodwill that ensues, blessings, overlooked, are more easily counted; thanks, forgotten, are more easily said.

If this is true of the world it should be doubly true in our own nation. Here, where blessings abound, thankfulness and goodwill can be bountifully dispensed. Here, too, the joys and hopes of Christmas can be fully savored.

And coming to our own calling of construction, the blessings to be thankful for are no less numerous and compelling. For their broad outline reveals that the construction industry, while as always directing its efforts to the service of mankind in creating facilities for health, shelter and communication, also bolstered the U. S. economy in a year of recession.

The construction men who create facilities of such essential kind can take cheerful respite from their labors this Christmas day in the realization that their work throughout the year has made this a somewhat better world in which to live. It is no small privilege to be engaged in tasks that contribute to the human welfare. Thankfulness for the opportunity is a part of Christmas.

But even greater opportunity—and therefore additional cause for thankfulness—always lies ahead. There is the challenge to do new things, to develop new products and new techniques and to improve old ones. And there is also the challenge, annually repeated, to do all these things in closer harmony with the ideals that the spirit of Christmas inspires.

Let this Christmas, therefore, be a day of rejoicing for all who follow the calling of construction. Let it also be a day for reflection on how to begin the new year with renewed faith in the future and with all goodwill. It is on this kind of a note that ENR's editors wish you a very Merry Christmas and a satisfying and Happy New Year.

Color in Buildings

IN KEEPING with the gay, festive mood of the Christmas season, ENR's cover this week flags the trend toward color in buildings. It signals specifically an article in this issue reporting what color in buildings cost, and concluding that designers think color is worth its price.

Just this month, at a construction conference in Chicago (ENR Dec. 18, p. 21) a speaker joked about the trend to new types of wall materials. He questioned their trade-in value, but argued that the time may come when the exterior of a building will have to change with the styles.

Actually, the only thing facetious about the idea is the trade-in value, since some old buildings have already shed their original skins for a more colorful raiment. There is a certain cheer to be derived from coming upon a strikingly different color in a building. Moreover, color provides a new dimension for imaginative designers to work on.

Color is a matter of taste, and there will be lots of it used in construction in poor taste. Still, the trend to acceptance of colored materials of construction is to be hailed. It's agreed: Color can be worth the price.

A Boost for Research

AT A TIME when American industry is raising research to ever higher levels of importance, research to advance the art of civil engineering and construction is by no means as active as it should be. Any effort made to encourage and promote research of a civil engineering nature is, therefore, worthy of high praise.

One such effort bore fruit last week when Raymond International, Inc., announced the first winner of its new Alfred A. Raymond Award, set up a year ago "to stimulate interest in foundation engineering." The award is given for a paper on a foundation engineering problem or project judged the best in a competition open to all.

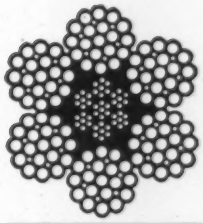
This first competition brought in a total of 29 papers. Some were directed exclusively to research projects; the winning paper presenting a new technique for stabilizing compressible soils.

Others discussed the solution of foundation problems as, for example, the construction of the main river pier on the Mississippi River Bridge at New Orleans and the underpinning of a wind tunnel at Langley Field. These were the subjects of papers receiving honorable mention.

But all the papers added to the sum total of knowledge and, most important, aroused the authors to new interest in their work.

Such a competition in itself is not, of course, research. That it may, however, promote research is easily possible, since it encourages engineers to review and analyze foundation problems in an orderly manner, and thus to detect new areas where knowledge is inadequate. Moreover, by focusing attention on foundation engineering as one of the civil engineer's most difficult and challenging tasks, the competition may cause laymen who engage foundation engineering services to raise their opinions of the importance of such work. Thus, their acquiescence, and perhaps even their support, may be more easily obtained when research is deemed necessary.

These awards by Raymond International, Inc., are a step in the right direction. By lending encouragement to research in the foundation field, they can stimulate interest in civil engineering research generally. More of it must be done if the art of construction is to advance.



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LOOK FOR THE YELLOW TRIANGLE

3 new applications get longer life and minimum maintenance using Dodge pillow blocks with Timken® bearings

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Cutaway view shows the Dodge All-Steel pillow block with Timken bearing mounting. Of special design, the bearing has a tapered bore with self-aligning spherical outer surface —never needs adjustment.

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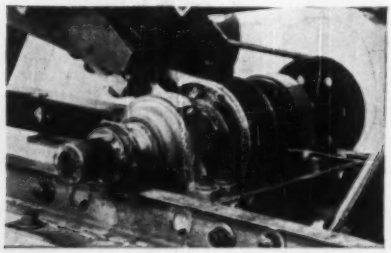
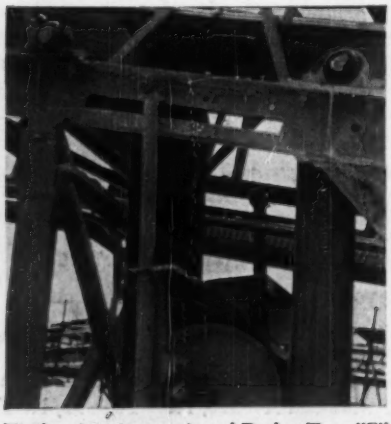
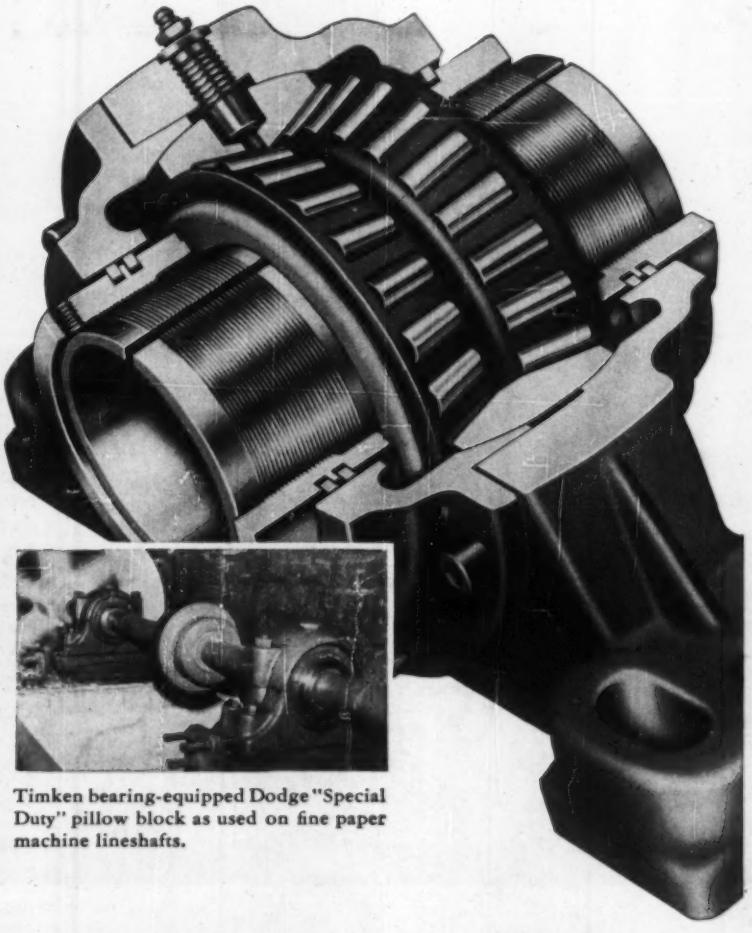


Timken bearing-equipped Dodge All-Steel pillow block used in a vibrating conveyor.



Timken bearing-equipped Dodge Type "E" pillow block used in sand and gravel plant.



Timken bearing-equipped Dodge "Special Duty" pillow block as used on fine paper machine lineshafts.

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